Université de Montréal

ORGANISATIONAL SYSTEM AND PERFORMANCE OF POST-DISASTER RECONSTRUCTION PROJECTS

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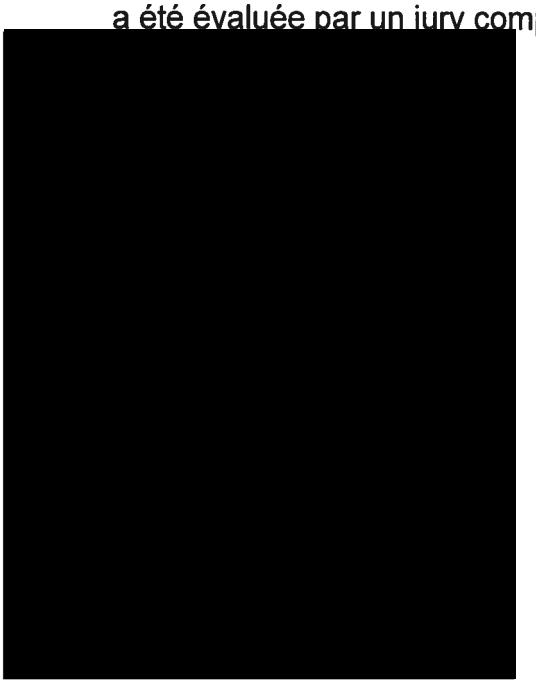

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Sommaire : Étude sur le système organisationnel et la performance de projets de reconstruction à la suite de catastrophes naturelles

Des efforts importants associés à une grande quantité de ressources (économiques, matérielles, humaines, etc.) sont constamment investis pour contribuer à la réhabilitation et à la reconstruction des communautés affectées par des catastrophes naturelles dans les pays en voie de développement. Cependant, ces initiatives de reconstruction font fréquemment l'objet de critiques à cause de leur performance qui est souvent insuffisante pour atteindre des niveaux acceptables de réhabilitation et de développement. Il n'est donc pas surprenant que des praticiens et des chercheurs à la fois dans les pays en voie de développement et dans les pays industrialisés reconnaissant aujourd'hui le besoin d'améliorer la performance des projets de reconstruction à la suite des catastrophes naturelles. Néanmoins, les efforts proposés - et d'ailleurs appliqués - pour améliorer la performance de ces projets ont été concentrés d'une façon dogmatique à la fois sur l'importance de la participation de la communauté (et en particulier sur les chantiers lors des activités d'auto construction) et sur l'importance de l'utilisation des ressources et des technologies locales. Cette approche (parfois exagérée – puisque certains ont même proposé le rejet des solutions techniques provenant de l'étranger) a été acceptée par plusieurs organisations et par la majorité des spécialistes dans le domaine de la reconstruction.

Suivant cette approche, UNDRO (The United Nations Disaster Relief Organisation) a proposé en 1982 : "La clé du succès reste finalement sur la participation de la communauté locale – les survivants".

Bien sûr, la considération des décisions tactiques, telles que le choix de la méthode d'auto construction à la place d'une solution technologique étrangère ou la décision d'utiliser des matériaux locaux et des technologies « indigènes »

à la place des solutions « de haute technologie » est importante pour tout projet de logements économiques. Cependant, ces décisions restent à un niveau tactique, et donc elles ont seulement une influence à l'échelle de la construction du projet; alors qu'en réalité, les organisations qui développent des projets de reconstruction évoluent - souvent - non seulement en tant que constructeurs mais aussi en tant que promoteurs d'initiatives. Ce double rôle implique que ces organisations ne réalisent pas seulement l'exécution des projets en assurant la coordination des activités de construction (en tant que constructeurs) mais qu'elles réalisent également les tâches de lancement et de planification des projets (en tant que promoteurs). Ces activités de « promotion » incluent souvent le financement, la gestion et la recherche de fonds pour le projet.

Cette étude suggère que la performance des projets de reconstruction à la suite des catastrophes naturelles est moins affectée par les décisions tactiques correspondant aux activités de construction (propres au rôle du constructeur) que par le système organisationnel du projet et par l'influence de l'environnement sur les activités dites « de promotion ». Cela veut dire que l'argument, généralement accepté, qui propose que la performance de ces projets dépend d'une part de la participation de la communauté aux activités de construction et d'autre part de l'utilisation des ressources locales, contribue fort peu à l'amélioration de la performance d'un projet de reconstruction surtout si l'on ne reconnaît pas que le projet est un système qui est inévitablement vulnérable aux influences d'un environnement hostile (le contexte post-catastrophe en pays en voie de développement est, sans aucun doute, un environnement très hostile).

C'est pour quoi, cette étude argue qu'une organisation peut être très performante, et avoir les meilleures intentions pour organiser un projet d'auto construction en utilisant des technologies locales à partir d'une approche participative. Cependant, si – par exemple – cette organisation n'est pas bien préparée pour obtenir des fonds sur le marché compétitif du financement

international, ou bien si cette organisation est affectée d'une façon négative par un changement politique ou économique inattendu (en particulier lors des activités liées à la promotion du projet), peu importe si le plan d'auto construction et l'approche participative sont bien considérés, le projet aura très peu de chances d'atteindre un niveau désirable de performance.

Cette approche exige d'aller au-delà de la vision traditionnelle (qui a tendance à mettre l'accent sur les décisions tactiques), et de plutôt considérer les décisions stratégiques dans une échelle de participants plus large – autrement dit la multi-organisation dans son environnement – sur une période de temps plus longue. Selon cette approche, les décisions stratégiques par rapport à la configuration du système organisationnel et la capacité de ce système pour mitiger les effets de l'environnement jouent un rôle fondamental à l'égard de la performance du projet. En particulier les décisions stratégiques importantes concernent : (i) l'intégration entre les organisations; (ii) l'obtention de fonds; (iii) la mitigation et la réponse aux risques; et (iv) le type de participation qui s'avère nécessaire de la part des usagers.

A partir d'une analyse de plus de trente cas de reconstruction et de la révision d'approches similaires déjà valables dans l'industrie « normale » du bâtiment, cette étude propose l'hypothèse suivante :

Dans le cadre d'une organisation adoptant les rôles de « promoteur » et de « constructeur » d'un projet de reconstruction à la suite d'une catastrophe naturelle, la performance de ce projet (c'est-à-dire la capacité d'atteindre les objectifs avec un maximum d'optimisation de ressources) dépend notamment :

1. *Des niveaux « d'intégration et de différentiation » à l'intérieur de la multi-organisation qui développe le projet, incluant l'intégration du projet dans un programme plus large de reconstruction;*
2. *De la capacité stratégique de la multi-organisation pour attirer des fonds;*

3. *De la capacité de la multi-organisation pour mitiger les risques de l'environnement ou pour les partager entre plusieurs participants;*
4. *Du niveau de responsabilité de la part des usagers en ce qui concerne la prise de décisions entre une série de choix offerts.*

La validation de cette hypothèse change la direction du débat relatif aux aspects considérés « clés » pour la réussite des projets de reconstruction (notamment la participation de la communauté et l'utilisation de ressources locales). De plus, elle propose la ré-formulation des « aspects critiques du succès » (Critical Success Factors, pour utiliser le terme développé par Leidecker and Bruno, 1986) des projets de reconstruction. La validation de l'hypothèse (vraie ou fausse) exige de trouver les relations qui existent entre le design du cadre organisationnel du projet et la performance globale de celui-ci. Dans ce but, quatre études de cas ont été étudiées d'une façon détaillée en utilisant la méthode traditionnelle de recherche qualitative (telle que proposée par Robert Yin, 1984). Ces quatre projets sont : (i) un projet rural de reconstruction en El Salvador développé par l'organisation FUNDASAL après les tremblements de terre de 2001, (ii) un projet urbain de reconstruction à San Salvador développé par la Municipalité de San Salvador après les tremblements de terre de 2001, (iii) un projet rural de reconstruction en Colombie développé par les Organisations de Cultivateurs de Café de la Colombie après le tremblement de terre de 1999, et (iv) un projet semi urbain de reconstruction en Honduras développé par une ONG Québécoise (CECI) après l'ouragan Mitch (1998).

Une méthode permettant de déterminer la performance de ces quatre projets a été développée en utilisant comme modèle de base les méthodes d'évaluation utilisées dans l'industrie du bâtiment et celles utilisées dans le domaine du développement international. Ainsi, une nouvelle version de ce qu'on appelle « Le Cadre Logique » (Logical Framework Analysis) a été utilisée pour évaluer les projets à partir d'une approche qui met l'accent sur les processus, leurs effets et leurs impacts à court et à moyen terme. L'objectif étant d'évaluer les

projets d'une façon plutôt objective, afin de réduire au maximum la subjectivité de l'évaluateur, les critères de performance ont été choisis à partir de principes cohérents. Ces critères ont permis d'établir 62 formulaires (chaque formulaire correspond à un critère de performance) et de les remplir d'une façon claire et précise. Pour résumer l'information contenue dans ces formulaires, un tableau de synthèse, utilisant un système graphique, a été réalisé pour chaque projet. Ces tableaux permettent de visualiser d'une façon standardisée la performance des projets et d'établir une échelle permettant de comparer les niveaux de performance (Benchmarking).

Même si les quatre projets ont utilisé une approche participative, ils ont eu des niveaux de performance très variés. Les projets ont eu des systèmes organisationnels et des approches de gestion différents de sorte qu'il a été possible de comparer les variables de l'hypothèse et d'obtenir différents modèles (patterns). Par rapport à l'hypothèse proposée, les modèles suivants on été identifiés dans les cas étudiés :

	variable (la performance du projet est une variable...)	**« Patterns »**
Première variable de l'hypothèse	Des niveaux « d'intégration et de différentiation » à l'intérieur de la multi-organisation qui développe le projet, incluant l'intégration du projet dans un programme plus large de reconstruction	La performance d'un projet **est** une variable dépendante des niveaux « d'intégration et de différentiation » a l'intérieur de la multi organisation qui développe le projet, incluant l'intégration du projet dans un programme plus large de reconstruction
Deuxième variable de l'hypothèse	De la capacité stratégique de la multi-organisation pour attirer des fonds	La performance d'un projet **n'est pas nécessairement** une variable dépendante de la capacité stratégique de la multi-organisation pour attirer des fonds; Cependant, un plan stratégique bien établi afin de positionner l'organisation dans l'environnement est le moyen le plus efficace pour attirer des ressources
Troisième variable de l'hypothèse	De la capacité de la multi-organisation pour mitiger les risques de l'environnement ou pour les partager entre plusieurs participants	La performance d'un projet **est** une variable dépendante de la capacité de la multi-organisation pour mitiger les risques de l'environnement ou pour les partager entre plusieurs participants

		Cependant, les facteurs externes n'influencent pas nécessairement d'une façon négative la performance du projet, ils influencent le système qui réalise le projet et de ce fait conduisent les organisations à prendre des décisions qui se manifestent de façon positive ou négative dans la performance du projet
Quatrième variable de l'hypothèse	Du niveau de responsabilité de la part des usagers pour la prise de décisions entre une série de choix offerts	La performance d'un projet **est** une variable dépendante du niveau de responsabilité de la part des usagers pour la prise de décisions entre une série de choix offerts

Ces résultats modifient la façon traditionnelle de percevoir la performance des projets de reconstruction et confirment plusieurs propositions et concepts développés dans le domaine de la gestion des projets. Ainsi, plusieurs généralisations analytiques - telles que proposées par Yin (1984) - peuvent être établies. Les résultats démontrent qu'il existe, en fait, une relation directe entre le système organisationnel et la performance des projets de reconstruction mais que la considération des aspects stratégiques joue également un rôle fondamental dans la réussite des projets de reconstruction suite aux catastrophes naturelles. Par ailleurs, cette étude transfère au domaine de la reconstruction suite aux catastrophes naturelles, des concepts qui ont été validés dans le domaine de la gestion des projets d'aménagement. Cependant, la contribution de l'étude ne se limite pas seulement à l'évaluation des résultats de recherche, elle inclut aussi des méthodes d'évaluation plus fines, pour la détermination de la performance des projets. La reformulation des aspects ayant une influence sur la performance des projets de reconstruction peut, sans doute, profiter d'une approche systématique du processus de gestion. Dans cette approche, les aspects organisationnels et stratégiques jouent un rôle prépondérant.

Mots clés : *reconstruction; catastrophes naturelles; logement; gestion de projets; système organisationnel; performance; évaluation de projets; pays en voie de développement.*

Abstract

Due to the major shortcomings frequently found in post-disaster reconstruction projects, practitioners and academics agree that important improvements are required in order to help affected families recover and to optimise the use of available resources. As the number and impact of natural disasters increase every year, the performance of reconstruction projects is increasingly a major concern for various disciplines in both developing and developed countries. However, the efforts to improve the performance of these projects (mostly for developing countries) have been obsessively concentrated on arguing for the importance of community participation (particularly in construction activities, through self-help programs) and on the importance of using local resources and technologies while rejecting the use of imported and foreign solutions.

This study demonstrates that, very often, organisations working in post-disaster reconstruction in fact act strategically, both as promoters and builders of the initiatives. Consequently, they are in a situation where the projects are (or should be) less influenced by the tactical decisions made in regard to the actual building process (e.g. on the role of builder) and more by the organisational system adopted for the project and by the influence of the broader environment on the activities of promotion. Building up on this hypothesis and within the framework of qualitative research, four reconstruction projects are analysed in detail and are compared with other cases reported in the literature. After responding to the challenge of determining the performance of the projects (and for this a method of evaluation has been expressly developed), the research identifies important organisational decisions that can greatly contribute to improve the way we help affected communities recover after natural disasters.

Keywords: *post-disaster reconstruction; housing; project management; organisational design; performance; project evaluation; developing countries*

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Glossary - Basic terms and acronyms

The following terms, proposed by different organisations, are included in the United Nations Department of Humanitarian Affairs' book: "*Glossary: Internationally agreed glossary of basic terms related to disaster management*" (UNDHA, 1992). This publication collects the internationally agreed definitions of disaster-related terminology.

Disaster: A serious disruption of the functioning of a society, causing widespread human, material, or environmental losses which exceeds the ability of affected society to cope using only its own resources.

Disaster management: The body of policy and administrative decisions and operational activities which pertain to the various stages of a disaster at all levels.

Evaluation: Post-disaster appraisal of all aspects of the disaster and its effects.

Hazard: A threatening event, or the probability of occurrence of a potentially damaging phenomenon within a given time period and area.

Mitigation: Measures taken in advance of a disaster aimed at decreasing or eliminating its impact on society and on environment.

Lifelines: The public facilities and systems that provide basic life support services such as water, energy, sanitation, communications and transportation.

Population at risk: A well-defined population whose lives, property and livelihoods are threatened by given hazards.

Reconstruction: Actions taken to re-establish a community after a period of rehabilitation subsequent to a disaster. Actions would include construction of permanent housing, full restoration of services, and complete resumption of the pre-disaster state.

Rehabilitation: The operations and decisions taken after a disaster with a view to restoring a stricken community to its former living conditions, while encouraging and facilitating the necessary adjustments to the changes caused by the disaster.

Secondary hazards: Those hazards that occur as a result of another hazard or disaster, i.e. fires or landslides following earthquakes, epidemics following famines, food shortages following drought or floods.

Main acronyms used in the text:

ASTM: American Society for Testing and Materials

CECI: Centre canadien d'étude et de coopération internationale – Canadian Center for International Studies and Cooperation

CGOs: Colombian Coffee Growers' Organisations

CIB: "Conseil International du Bâtiment", in English: International Council for Building.

CIDA: Canadian International Development Agency

DIRDN: Decenio Internacional para la Reducción de los Desastres Naturales - International Decade for Natural Disaster Reduction (IDNDR)

FOREC: Fondo para la Reconstrucción y Desarrollo Social del Eje Cafetero

FORECAFE: Fondo para la Reconstruccción del Eje Cafetero

FUNDASAL: Fundación Salvadoreña de Desarrollo y Vivienda mínima

IDB: Inter-American Development Bank (BID in Spanish)

ILO: International Labour Organisation

LFA: Logical Framework Analysis (also Log. Frame.)

MSS: Municipality of San Salvador

OECD: Organisation for Economic Co-operation and Development

PMI: Project Management Institute

UN: United Nations

UNCHS: United Nations Centre for Human Settlements

UNDHA (or DHA): United Nations Department of Humanitarian Affairs

UNDP: United Nations Development Program

UNDRO: United Nations Disaster Relief Organisation

UNESCO: United Nations Educational, Scientific and Cultural Organisation

USAID: US Agency for International Development

WB: World Bank

Chapter I, Introduction

Chapter I, Introduction

1.1. Introduction

Major efforts and large amounts of resources are constantly invested to help communities devastated by natural disasters in developing countries to recover. While the performance of these projects is largely criticised, the need to improve reconstruction practices is recognised today by practitioners and academics world-wide. However, the efforts to improve the performance of post-disaster reconstruction projects in developing countries have been obsessively concentrated on arguing for the importance of community participation (particularly in construction activities through self-help programs) and on the importance of using local resources and technologies while rejecting the use of imported and foreign solutions.

The consideration of tactical decisions, such as deciding upon the use of self-help instead of industrialised construction, or deciding upon the use of local materials and indigenous technologies instead of imported techniques is indeed important for every low-cost housing project – but they remain at the level of tactics. Nevertheless, very often, organisations working in post-disaster reconstruction act strategically both as promoters and builders of the projects. This means that not only do they adopt the role of executing the project by organising construction activities (build) but they also plan and initiate (promote) the project, including financing it and/or assuring resources for its funding.

This research argues that the performance of post-disaster reconstruction projects is less influenced by tactical decisions made in the building process (on the role of builder) than by the *organisational system* of the project and by the influence of *the environment* on the activities of promotion, that is to say, by the strategic decisions concerning the system as a whole. This means that the widely-accepted argument about the crucial importance of community participation in

construction and the use of local resources contributes – in reality – very little to improve the performance of reconstruction if the project is not considered as a system that is greatly affected by its generally hostile environment (typical of the post-disaster situation of developing countries).

In other words, this study argues that you can be extremely proficient in organising a self-help project that uses local technologies of construction through a grass-roots approach. However, if your organisation is not well prepared - for example - to obtain funds in the competitive market of international funding or your organisation is negatively affected by a sudden political or economic change (particularly in the activities related with promotion of the project), it does not matter how good your self-help and community participation plan is, your project has little chance of attaining a desirable level of performance.

This approach implies going beyond the traditional emphasis on tactical decisions, considering instead strategic decisions in a wider scale of participants (the multi-organisation *and* its environment) within a longer sequence of time. According to this approach, strategic decisions regarding the configuration of the organisational system and the capacity of that system to mitigate the effects of the environment play a fundamental role in the performance of the project. In particular the most important of the strategic decisions concern: (i) the integration between organisations; (ii) obtaining funds; (iii) sharing and preparing for risks; and (iv) the type of users' participation.

From the analysis of more than thirty cases of reconstruction and the review of similar approaches already validated in the regular building industry, this study proposes the following hypothesis:

In the context of an organisation adopting the roles of promoter and builder of a reconstruction project, the performance of the project (that is to say, the capacity

to reach the objectives with the maximum optimisation of resources) depends to a great extent on:

1. *The level of integration and differentiation within the multi-organisation (that is formed to carry out the project), including inserting the project in a larger program of reconstruction;*
2. *The multi-organisation's strategic capacity to attract funding;*
3. *The multi-organisation's capacity to share and react to the risks of the environment;*
4. *The level of user's responsibility for individual decision-making among a series of choices offered.*

If proved right, this hypothesis changes the direction of the current debate built around the so-called "key aspects" for success in reconstruction (namely the participation of end-users and the use of local resources and know how) and proposes a re-evaluation of the Critical Success Factors of reconstruction projects, using the concept developed by Leidecker and Bruno (1986).

Validating this hypothesis requires associating the organisational design of the projects to their overall performance. In a traditional case-study methodology four detailed case studies were used for the purposes of demonstrating that the hypothesis is true or false.

A method for assessing the performance of the projects needed to be developed using, as a basis, the evaluation methods used both in construction and in the international development field. The surprising results that were obtained highlight the vulnerability of low-cost housing projects to their environments, and give valuable information for the design and implementation of future projects of post-disaster reconstruction in developing countries.

1.1.1. The document

The document is presented in four chapters: (i) introduction, (ii) methods, (iii) results and (iv) discussion. The introduction (this chapter) includes the rationale, the theoretical framework of the study and the analysis of the literature in the field. The methods of research developed in chapter two are applied to the four case studies presented in chapter three. The third chapter also presents the analysis of the results, and finally, in chapter four the main conclusions of the study are proposed and discussed. The appendix includes numerous supporting tables of evaluation that are also submitted on a CD as MS Excel files.

1.2. Database of case studies

The argument proposed in this study is based on the analysis of several cases of reconstruction projects reported in the literature and eight others visited and studied through information gathered first hand. Table 1.1 presents a summary of the 34 case studies that were studied in the research. More than 30 additional projects, documented by UNDRO (1982), Maskrey (1989), the World Bank (2000), Yasemin and Oliver (1987), Davis (1987) and Oliver-Smith (1990) were also considered while developing the argument and in the process of validating the hypothesis.

Table 1.1 Database of projects used for the study

	location	type	disaster	date	organisation responsible	main outputs	number of housing units built	visited in
projects visited and studied through information gathered first hand								
1	Choluteca, Honduras	semi-rural relocation	hurricane Mitch	1995	CECI	masonry units, education and training	52	2002
2	rural area Colombia	rural reconstruction	earthquake	1999	Coffee Growers' Organisations	housing, infrastructure, services, employment, education, information		2000, 2002
3	Tebaida, Colombia	semi-rural relocation	earthquake	1999	Antioquia Presente	masonry houses, infrastructure, community services	952	2002
4	Armenia, Colombia	urban temporary housing	earthquake	1999	Universidad Nacional	timber units, education, information, food, temporary infrastructure	9000	2002
5	Calarca, Colombia	semi-rural relocation	earthquake	1999	FENAVID-Servivienda	prefabricated housing and infrastructure	150	2002
6	Amenia, Colombia	urban relocation	earthquake	1999	ONG Restrepo Barco	costumed-made houses, infrastructure and community services	64	2002
7	San Salvador, El Salvador	urban relocation	earthquake	2001	Municipality of San Salvador	infrastructure	0	2002
8	La Paz, El Salvador	rural reconstruction	earthquake	2001	FUNDASAL	pre-fab and masonry units, municipal education	4400	2002
projects documented in the literature								**documented by**
9	Andhra Pradesh, India	consultancy	various disasters	n/a	ATMA	consultancy, studies	n/a	Jayaraj, 2001
10	Peru	rural preparedness	n/a	n/a	CRYRZA - UNCHS	studies, R&D, training, education, technology	n/a	UNCHS, 1989
11	Yungay, Peru	town relocation	earthquake	1970	CRYRZA	pre-fab core houses	for 100,000	Oliver-Smith, 1990
12	El Asnam, Alegria	semi-rural reconstruction	earthquake	1980	UNCHS (Habitat)	pre-fab housing, urban planning and studies	40000	UNCHS, 1989
13	Dominica	rural reconstruction	hurricane	1980	UNCHS (Habitat)	studies, R&D, training, education, technology transfer	1 prototype	UNCHS, 1989
14	Lamu, Kenya	urban planning and prevention studies	fire	1982	UNCHS (Habitat)	urban planning studies, risk mapping and preparedness	n/a	UNCHS, 1989
15	Dhamar, Yemen	rural reconstruction	earthquake	1982	UNCHS (Habitat)	housing, technology transfer, education	280	UNCHS, 1989
16	Titicaca, Bolivia	rural reconstruction	floods	1985	UNCHS (Habitat)	housing, reinforcement of institutions	300	UNCHS, 1989
17	Mexico, Mexico	urban planning and prevention studies	earthquake	1985	UNDP - UNCHS	seismic hazard analysis, vulnerability assessment seismic-risk mitigation	n/a	UNCHS, 1989
18	Armero, Colombia	urban relocation	landslides	1985	Local Government	housing	n/a	Andersen and Woodrow, 1989
19	San Salvador, El Salvador	urban planning studies	earthquake	1986	UNCHS (Habitat)	urban planning studies, risk mapping and preparedness	n/a	UNCHS, 1989
20	San Salvador, El Salvador	urban reconstruction	earthquake	1986	Municipality of San Salvador	condominiums	1000	Solo, 1991
21	San Salvador, El Salvador	urban reconstruction	earthquake	1986	Cooperative Housing Foundation	mesones (traditional urban typology of housing units)	150	Solo, 1991
22	Cayambe, Ecuador	rural reconstruction	earthquake	1987	CAAP (Centro Andino de Accion Popular)	housing, education, tool kits, subsidies, materials	1700	Dudley, 1988

23	Philippines	rural reconstruction	typhoon	1987	Local government, UNDP, UNDRO	core housing project, training, education, community organisation	16000	Diacon, 1992
24	Ecuador	rural reconstruction	earthquake	1987	UNCHS (Habitat)	studies, R&D, training, education, technology transfer for housing and infrastructure	n/a	UNCHS, 1989
25	Bangladesh	rural reconstruction	floods	1988	UNCHS (Habitat)	studies, logistics, management	n/a	UNCHS, 1989
26	Nepal	urban reconstruction	earthquake	1988	UNDP - UNCHS	studies, R&D, training, education, technology transfer for housing and infrastructure	n/a	UNCHS, 1989
27	Al-Burjain, Lebanon	urban reconstruction	civil war	1991	Local governments	housing, infrastructure	n/a	El-Masri and Kellett, 2001
28	Bangladesh	rural reconstruction	cyclones	1991-1996	Local Government	community housing and "killas", planning, preparedness, infrastructure	n/a	Karim, 2001
29	Lio, Indonesia	village relocation	earthquake	1992	Local government	houses and urban/regional plan	127	Tjahjono, 1999
30	Maharashtra, India	village relocation	earthquake	1993	Maharashtra's Government and World Bank	housing	24000 house-holds relocated	Salazar, 1999
31	Marathwada, India	village relocation	earthquake	1993	Local Government and World Bank	housing	27000	Jigyasu, 2000
32	Kutchch, India	village reconstruction and resettlements	earthquake	1993	Vastu-Shilpa Foundation	housing, education, training, studies, community mobilisation	n/a	Vastu-Shilpa, 2001
33	Konaseema, India	rural recovery	cyclones	1996	Local Task Forces	medical care, rescue, food, subsidies, temporary shelters	n/a	Sivaji, 2002
34	Marmara, Bolu, Turkey	temporary relocation	earthquake	1999	Local Government	temporary units	47000	Johnson, 2001

1.3. The current debate around reconstruction practices

> *"In the earthquake I was with my wife, Rubiela, in the town, and we were surprised to see the houses falling down....we almost had to walk to my farm as there was no transportation. When we arrived, I felt happy to know that my family was alive, but at the same time very sad to see the house totally destroyed... We thought we could not rebuild our house again because we didn't have any resources..."*
>
> Oscar Bermudez. citizen and farmer of Calarca, Colombia; when asked about his experience in the earthquake (Translated from Cafered, January 25, 2000).

This family, as well as millions of families in the world, were recently affected by a disaster. In 1999 alone, disasters left 105,000 deaths and losses for 100 billion dollars (Swiss Insurance Company Swiss Re, as reported by the AP. Journal de Montréal, March 8, 2000). In earthquakes alone, 15 million people suffered serious injuries and 100 million had their homes destroyed in the last century (Hewitt,1997). Disasters are common scenarios calling for the contribution and co-operation of international institutions. Canada alone invested US$ 174 million in 1996 in international programs that include post-disaster interventions. Disasters draw the attention of local and international media, and in several cases institutions put up enormous economic resources in places where the pre-disaster economic conditions were already critical. The major problem lies on the fact that, instead of decreasing, disasters occur every year more often, and are more destructive. It is difficult to know if the natural events are actually more frequent, they are, however, better documented and occur in locations where populations are now densely settled. In fact, it is estimated that the population affected by disasters world-wide increases 6 % per year since 1960 (DIRDN, 1996).

Central and South America are areas of continuous disasters. Over the last hundred years, the Latin American and Caribbean region has been affected by an estimated total of 1,309 natural disasters, During the last 30 years alone, the region was affected by 972 disasters, i.e., 32,4 disasters annually on average. Peak years (1998 and 1999) witnessed 60 or more disasters.

Even though several strategies have been proposed for post-disaster interventions, housing provision has frequently been a controversial aspect of the reconstruction and mitigation stages in developing countries. Therefore, the kind of housing units that can, or should be provided, the interaction of international agencies with regional institutions, the role of the local government in housing provision, and the participation of the community in the construction of units, are major concerns and constant targets of discussion.

In order to provide the fastest relief, the most efficient shelter and the most adequate mitigation program to affected communities, different strategies have been proposed. However, most of the strategies adopted in housing reconstruction in the last fifty years can be grouped in two extreme approaches.

1. *A community-based* or bottom-up approach (so called by El-Masri and Kellett, 2001). It is frequently supported by the so-called 'enabler' policy of housing provision (as proposed by the World Bank, cited by Zanetta, 2001). It usually includes a central self-help project and promotes community participation. It is targeted to "grass roots" development and is based on the argument that this approach helps build self-reliance into the affected communities (Davis, 1981; Yasemin and Oliver-Smith, 1987; Anderson and Woodrow, 1989; UNCHS, 1989; Maskrey, 1989; Oliver-Smith, 1990).

2. *A technology-based* or top-down approach (so called by El-Masri and Kellett, 2001). Almost exclusively based on prefabricated technologies and external provision of resources, it is usually accompanied by a 'provider' policy. With great reliance on the import of dwellings, it has been promoted because of the alleged speed with which housing can be completed (Donato et al., 1972; Latina, 1988; Ban, 1996; Chalinder, 1998; Richard, 2002).

In both the technology and the community-based approaches extreme solutions have been adopted resulting in either high-tech imported units delivered through complicated and expensive logistics or in labour-intensive self-help construction practices (for example, construction work for food programs). Fig. 1.1 illustrates some of the extreme attitudes adopted in post-disaster reconstruction. Fig. 1.2 shows examples of technology-based imported solutions used for housing after disasters.

Fig. 1.1 The two extreme approaches to housing reconstruction. **Left:** images of labour-intensive work in self-help initiatives organised in a community-based approach. **Right:** images of ready-to-use imported pre-fab units developed in a technology-based approach. Source: http://instantshleters.com (October, 1999)

Fig. 1.2 Technology-based imported solutions used for housing after disasters. **Left**: Polyurethane domes designed in 1970 by the West German Red Cross in collaboration with the Bayer Chemical Company. **Center and right:** Emergency shelters designed by the "Affordable instant storage and greenhouses" Source: http://instantshleters.com (October, 1999).

Within the community-based approach, ambitious plans of community reconstruction, users' participation, self-help construction and holistic measures targeted to long-term development have been proposed. A relevant discourse arguing for this approach is proposed by Andrew Maskrey (1989), who presents, in *Disaster Mitigation: A Community Based Approach,* lessons obtained from several cases of disaster mitigation in Peru. Maskrey associates the results of disaster mitigation strategies with a special emphasis on the community participation components of the projects. His research is conducted from the assumption that disasters are the result of the conjunction between a natural hazard, and socio-economic and political processes. Years later, this approach was illustrated by Blaike and colleagues (1994) in the disaster-pressure model that is explained in section 1.3.1. Maskrey's study, encouraging the practice of the community-based mitigation program, suggests guidelines for other institutions and establishes a number of priorities and principles for successful implementation. A similar approach is presented by Yasemin Aysan and Paul Oliver's (1987) book *Housing and Culture after Earthquakes*. In their study, after presenting a particular case study in Turkey, appropriate policies to follow in the future are suggested. The policies and guidelines suggested by Maskrey, Aysan and Oliver have been widely accepted and have been adopted by major organisations such as the United Nations' agencies. In these guidelines, relocation, temporary housing and imported solutions are widely criticised and are often said to be associated with problems in the acceptability of the outputs and with negative effects in long term development.

Yasemin and Oliver's (1987) study strongly recommends avoiding forcing the relocation of settlements unless there are "strong ecological problems, continuing risk of immediate hazards, or insuperable problems in moving debris." – an approach that is shared by many other authors such as Frederick Cuny (1983). The argument also discourages the use of emergency imported shelters, by considering them not to be feasible solutions, as UNDRO in the book *Shelter after Disaster* (1982) explains:

> "Universal standard shelter is not feasible because it ignores: [i] The high price and poor cost effectiveness of the product in the disaster affected country, [ii] the need to involve disaster survivors in satisfying their own needs, [iii]...climatic variations, [iv] variations in cultural values and house forms [v] variations in family size, [vi] the need of families to earn their livelihood in their houses, [vii] local capacity to improve shelter, [viii] the problems of obtaining suitable land at low cost on which to build such shelters, [ix] the logistical problem of transporting and distributing, [x] problems of appropriate technology".

The influence and importance of social aspects in the post-disaster housing process are discussed by Oliver-Smith in the article "post-disaster housing reconstruction and social inequality", published in 1990, in the journal *Disasters*. According to Oliver-Smith "greater attention needs to be paid to the issue of social stratification and its relationship to post-disaster reconstruction for social change and development."

A similar article by Souheil El-Masri "Learning from the People: A Fieldwork Approach in War-damaged Villages in Lebanon", published in the book *Reconstruction after Disaster: Issues and Practices* in 1997, documents how an understanding of both the social context and the people's needs is a fundamental pre-requisite to meet the challenges of reconstruction after a disaster. The article presents an approach called "reconstruction with people", where the response is based on an understanding of the social environment of the disaster and where the role of the end-users is articulated in the reconstruction program.

This approach to post-disaster housing reconstruction has also influenced the application of so-called appropriate technology. Contemporary theories in this regard encourage the practice of relying on training methods instead of technology transfer for the improvement of construction and the reduction of

vulnerability. The article "Learning to Build Safe Roofs: UNESCO's role", published by the United Nations Department of Humanitarian Affairs on the *DHA News Journal* (1997), is an example of the current concern regarding roofing technology and the training methods' approach. On the other hand, the technology transfer of imported solutions and industrialised solutions has been considered to be "disappointing" (UNDRO, 1982) and is frequently criticised by many scholars. Influenced by these concepts, Weldelibanos' (1993) thesis at McGill University argues for the application of traditional technologies and indigenous materials combined with efficient structural systems. This practice has been qualified, in the context of traditional settlements, as a more convenient response for risk mitigation and reduction.

Table 1.2 summarises some of the publications contributing to post-disaster reconstruction theories. The date of publication, the author, and a simplified description of their theoretical approach are listed. The table illustrates that, during the last twenty years, several authors have investigated the social aspects of the housing reconstruction process. While doing so, some authors have gone even further in disqualifying the use of the approach that associates housing as an industrialised product that is provided to the affected community. This is an argument that is easy to support, considering the numerous cases of dissatisfaction and failure in the use of industrialised solutions within the last three decades. However, before falling into the trap of drawing categorical conclusions, it is important to evaluate individual cases and to pay special attention to local factors, notably to the climate. Extreme weather conditions (extreme hot, rain or cold) can not be excluded as a priority when selecting the type of approach to be implemented. In fact, in cases where extreme temperatures rapidly endanger survival, construction speed is a relevant factor and the fastest shelter solutions can in fact be the most advantageous.

Table 1.2 Recent approaches to post-disaster reconstruction

Author	Publication	Year	approach
The World Bank	*Risks and reconstruction: Experiences of resettlers and refugees*	2000	Housing for refugees and resettlement projects
El-Masri, Souheil. Edited by Awotona, Adenrele	*Reconstruction after disaster: Issues and practices*	1997	Reconstruction with people
UNDHA - UNESCO	*DHA News Journal*	1997	Programs of education, participation and women involvement
United Nations	UNDRO. *Shelter after disaster* UNDRO News	1982 1992	The social reconstruction of the community
Weldelibanos, Fitsumberhan Thesis at McGill	*A survey of earthquake mitigation strategies and building principles for small traditional dwellings*	1993	The importance and possibilities of traditional technologies in the reconstruction process
Oliver-Smith, Anthony	*Post-disaster housing reconstruction and social inequality: A change to policy and practice*	1990	The importance of social aspects in post-disaster reconstruction
Maskrey, Andrew	*Disaster mitigation: A community based approach*	1989	Community based mitigation programs
Yasemin, Aysan and Oliver, Paul	*Housing and culture after disasters: A guide for future policy making on housing in seismic areas*	1987	Permanent reconstruction and social consequences after resettlement. The importance of the community in the reconstruction process
Davis Ian	"Developments in the provision of culturally sensitive housing within seismic areas 1981-1986" *Proceedings of Middle East and Mediterranean regional conference on earthen and low –strength masonry buildings in seismic areas*	1987	The importance of the participation of survivors and education programs
Davis, Ian	*Disasters and the small dwelling*	1981	The importance of understanding low-cost residential reconstruction beyond the technical aspects

Some of the documents listed above encourage the policies of indigenous permanent solutions for post-disaster strategies in developing countries while discouraging the use of imported solutions, high-technologies and non-traditional

construction systems. However, for other authors in the low-cost housing field, the disadvantages of prefabrication for housing solutions in developing countries do not seem to be that clear; or at least, they seem to be dependent on several factors. Such is the case of Melanie Stallen, Yves Chabannes and Florian Steinberg, (1994) who constituted a research team in the Institute for Housing and Urban Studies (IHS), in the Netherlands. Their study, published in the 18th Volume of the Journal *Habitat International*; presents an alternative point of view with regard to the advantages or disadvantages of housing prefabrication in Colombia, India, Mexico, China and Nicaragua.

In their report, the authors demonstrate that prefabrication can make a positive contribution to low-income housing solutions. The applicability of light prefabrication can be based on the pattern of local resources and reflect the state of the local "technical culture". IHS suggests that a change of scale in the construction market can be introduced by combining prefabrication and *self-help/mutual-aid* for large-scale low-income projects. The study shows that, "given the right circumstances, costs can be reduced, employment opportunities generated, low skill levels utilised, opportunities created for women and the local resources can provide the basis of such prefabrication." However, those circumstances depend mainly on the use of 'light' prefabrication systems that, unlike the 'heavy' systems, do not rely on external inputs with acquisition of patents, equipment, know-how, and raw materials from "the outside". The proper circumstances are ascertained through the careful articulation between local and external resources.

The major problem with which we are confronted now is that either by adopting one approach or the other (the community- or the technology-based), there is evidence that shows that existing housing reconstruction strategies have failed in enabling vulnerable communities to recover in the short run and in achieving long-term development over time. Extensive criticism of post-disaster reconstruction projects in developing countries have been exposed by Davis, (1981), and

multiple examples of the failure of these strategies are reported by Anderson and Woodrow (1989); Davis (1978); Dudley (1988); Oliver-Smith (1990); Salazar (1999); Solo (1991); Tjahjono (1999) and Wisner (2001). Section 1.7.3 highlights some of the frequent risks that influence the performance of reconstruction projects. However, let us dwell first on the basic concepts that will permit us to develop a different approach.

1.3.1. Disasters and the concept of vulnerability

It is commonly accepted by international organisations that a disaster is "a serious disruption of the functioning of a society, causing widespread human, material or environmental losses which exceed the ability of the affected society to cope using only its own resources" (UNDHA, 1992). Even though there is little controversy around this definition, it is not enough to explain why disasters happen. In other words, why there is a limit of destruction beyond which societies cannot cope with their own resources. To overcome this limitation, Blaike et al. (1994), Hewitt (1997) and other contemporary authors have developed the concept of vulnerability to explain the causes of 'natural' disasters. The notion of vulnerability examines the reasons that lead a community to a certain level of 'weakness', such that, influenced by a natural hazard, it is led to a level of destruction from which the community cannot recover without external aid.

The United Nations agencies define vulnerability as the "degree of loss (from 0% to 100%) resulting from a potentially damaging phenomenon" (UNDHA, 1992). Even though this definition is accepted in the internationally agreed glossary of disaster management, this definition does not describe what Blaike et al. (1994), Hewitt (1997) and Maskrey (1989) - among others - try to communicate in their vulnerability approach to disasters. In reality, the vulnerability model claims that the vulnerabilities correspond to unsafe conditions originated by dynamic pressures. Very often these dynamic pressures (caused by social, political, economic and cultural factors) originate - in reality - in historic events called "root

causes". According to this approach when unsafe conditions meet with a natural hazard the disaster occurs. Fig. 1.3 shows (as a way of exemplifying this argument) the vulnerability model applied to the 1999 earthquake in Turkey.

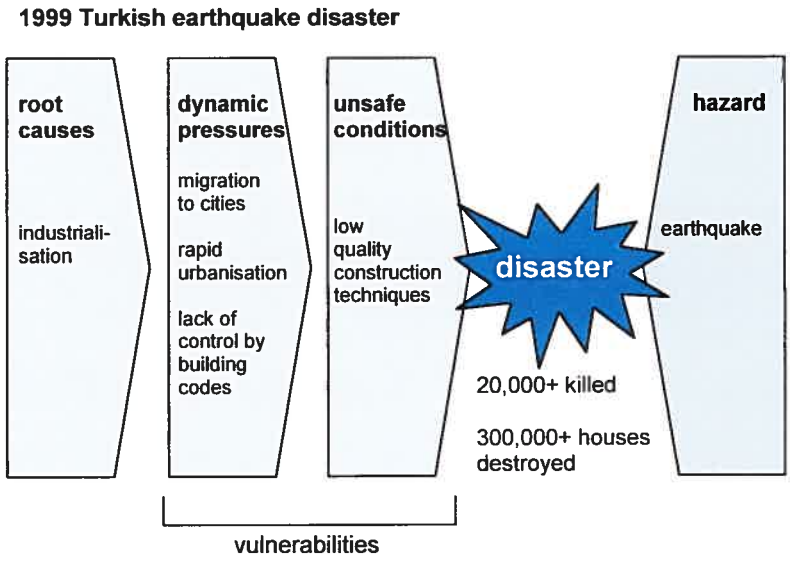


Fig. 1.3 The vulnerability model (after Blaike et al. 1994) applied – as an example – to the Turkish disaster in 1999.

This analysis is very useful to understand the causes of disasters and the accumulation in time of unsafe conditions. However, it indicates very little about what type of actions are required to overcome the disaster. Here, it is proposed to take the concept of vulnerability even further in order to clarify what it really means in terms of reconstruction activities. In fact, vulnerability is the lack of up-front access to resources (material, such as finance, housing, roads, infrastructure, public services, etc.- and organisational, such as insurance, individual decision making, education, information, etc.). According to this definition, the unsafe conditions and dynamic pressures correspond, in reality, to inappropriate or insufficient access to the resources that permit a community to deal with the effects of natural hazards.

This approach not only builds up on the concepts and ideas elaborated by previous research (Blaike et al., 1994 and Hewitt, 1997) but also permits taking a step forward in identifying what the role of reconstruction is after a natural hazard. The following section explains in detail that role.

1.3.2. The concept of reconstruction

From the community-based approach to reconstruction described earlier, a concept of sustainable reconstruction has been developed and commonly accepted by most scholars. In this concept, the reconstruction is the group of "actions taken to re-establish a community after a period of rehabilitation subsequent to a disaster. Actions would include construction of permanent housing, full restoration of services, and complete resumption of the pre-disaster state" (UNDHA, 1992).

This concept has frequently been accompanied by the idea that the reduction of the vulnerabilities and sustainable reconstruction are ***only*** achieved through the reinforcement of local strengths. "The key to success ultimately lies in the participation of the local community – the survivors – in reconstruction" (UNDRO, 1982).

However, if we consider the vulnerability as the lack of access to resources, and we consider that the natural hazard (that triggers a disaster) reduces even more that access to resources (banks, offices, housing and commerce are destroyed), we understand what the process of reconstruction is for: improving the people's access to resources lost and to develop access to the basic resources that people did not have before the disaster. Only through the improvement of these two levels of resources will the community be prepared to face the next natural

hazard. Fulfilling this condition is a requirement to facilitate the long-term sustainability of the intervention.

The process of reconstruction is also concerned with articulating the local resources available with the external aid required, and relating all of them to the end-users and their needs and expectations. It is usually recognised that there are two types of resources that determine the "level of development" a community has: (i) 'hard' resources (which describe tangible and physical resources such as housing, infrastructure, public services, etc) and (ii) 'soft' resources (which describe non tangible or not physical resources such as employment, education, information, etc.)

Consequently, from the previous analysis it is possible to propose the following definition of post-disaster housing reconstruction: "the ***process*** of improvement of pre-disaster housing conditions; targeted to achieve long term local development through the articulation of local and external resources giving to residents increased access to the 'hard' and 'soft' factors of reconstruction". This definition is represented by Figure 1.4, which illustrates in a vertical scale the level of access to resources (that is to say the level of vulnerability), and a horizontal scale of time. The level of access to resources is affected by the hazard (earthquake, flood, storm, etc). If the hazard is strong enough and the pre-disaster access to resources of the population is low, the community cannot cope with the losses and damages exclusively with its own resources. This particular case, where external aid is required, is called a disaster. The process of recovery (represented by the blue curve) corresponds to the reconstruction process, leading to an increase in the pre-disaster level of access to resources.

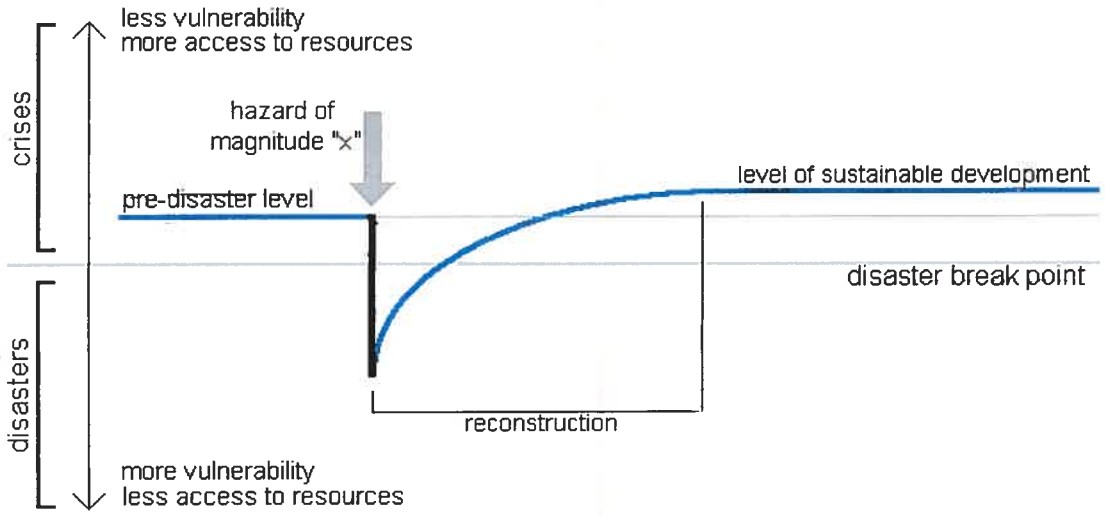


Fig. 1.4 Model illustrating the concept of post-disaster reconstruction

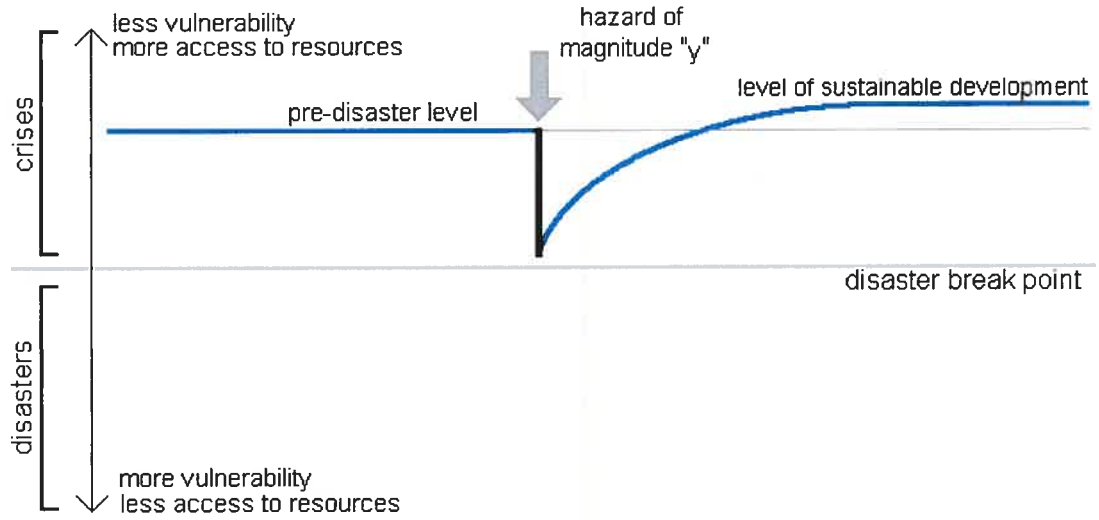


Fig. 1.5 Model illustrating the concept of crisis recovery

This definition of disaster. contrasts with the equivalent definition of housing crises represented in Fig. 1.5 In this case, the community affected by the hazard of magnitude 'y' (where 'y' may be as great as 'x') still has enough 'hard' resources (such as materials, technology, financial resources, etc) combined with 'soft' resources (such as education, qualified labour force, active decision-making, politic saying, know-how, etc) to recover on its own without the need of external aid. In this particular case the community 'only' goes through a crisis.

In conclusion, these definitions of reconstruction and vulnerability imply three important aspects:

First, that the reduction of vulnerabilities is a dependent variable of the access to resources (this does not ignore that vulnerabilities correspond to added-up weaknesses and root causes, as suggested in previous models such as Blaike et al., 1994). However, this clarifies what the process of reconstruction is intended for, namely, the improvement of access to resources.

Second, that reconstruction is the process in which pre-disaster housing conditions are *improved to a sustainable level* of access to resources for long-term development. This notion has been previously suggested in studies related with international aid for development (Anderson and Woodrow, 1989) and in environmental studies for developing countries (OECD, 1995). This means that reconstruction is not only the recovery of normal activities but also improvement above the previous level of development.

Third, by definition, post-disaster reconstruction is a process required when (and only when) the community cannot cope with a situation with its own resources and therefore, external resources are required (UNDHA, 1992). This view emphasises the difference between crisis solutions and post-disaster reconstruction. It contrasts with some extreme tendencies that lay almost all the emphasis on the use of local resources and on community action, sometimes underestimating the inescapable need for external resources. The lower the access to resources before the disaster, and therefore the lower after the disaster (i.e. the lower the curve goes down in Fig. 1.4), the more resources are needed for the community to be re-established or developed in co-ordination with external aid. Even though this might sound obvious, research shows that, in fact, the recognition of the impact - in terms of sustainability - of external resources is frequently not achieved in reconstruction (Davis, 1981).

1.4. The problem

The current acceptance and diffusion of the community based (or bottom-up) approach among NGOs, practitioners and researchers in the field of reconstruction has lead to the belief that the best (and only) way to achieve success in reconstruction practices is through the participation of local residents and use of local resources. This approach has led many academics and practitioners to concentrate their efforts to improve the performance of reconstruction projects through aspects that can be considered at a tactical level (that is to say on a project-by-project basis). In fact, the review of several cases in the literature and some of the cases presented in the Montreal conference (i-Rec, 2002) prove that much of these efforts have been devoted to the implementation of two major tactical measures: (i) the use of local (sometimes vernacular) construction technologies instead of foreign (imported) technologies; and (ii) increased levels of users' participation in the construction process.

Several examples can be used to illustrate this tendency. However, the research and practice conducted by Annie Jayaraj in India illustrates the particular interest to emphasise, almost as a matter of doctrine, the relevance of these two aspects. According to Jayaraj (2002):

> "Several principles and best practices in post-disaster reconstruction work have been identified [in twenty years of research and practice in the field] and they are listed below:
> • The reconstruction work should be community managed, controlled and owned, socially and culturally acceptable. It should promote mutual support of the communities, enlist self-help and ensure voluntary labour.
> • The locally existing ecologically friendly, low cost materials should be used. All of the available local resources, local talents, subsidies and various schemes of the governments [must be exploited].

- Simple, current, cost effective, research-based technology and indigenous technology that is easily adaptable and maintainable must be preferred.
- Efforts should be made to make use of the old and useful building materials and thereby avoiding wastage and minimise the cost of construction.
- The labour intensive technology should be encouraged and mechanisation of construction and labour displacing technology should be opposed and discouraged.
- The program should facilitate skill development, up-grading of traditional skills and encourage learning by doing. It should encourage and make use of the materials produced by village industries and rural artisans"

As it was mentioned before, this tactical approach has been recommended by Maskrey (1989), the United Nations agencies (UNDRO, 1982), NGOs (CECI, 2001), funding bodies such as CIDA (CIDA website, Feb, 2004) and others. It has been implemented in projects in El Salvador, Peru, Bolivia, Colombia, Honduras, Equator, the Philippines and Vietnam, among others.

In the regular building industry, the tactical approach to processes (and the performance of these processes) contrasts with the strategic approach, in which long-term aspects - that are not necessarily related to any one project - are considered. In the strategic approach, performance is associated with the development of an organisation over a longer period of time and according to an organisation's mission, objectives and strategy. The strategy permits to position the organisation in its environment and determines the way to attain the mission and objectives (that go beyond the interests of individual projects). As proposed by Lloyd Byars (1984), strategic planning requires the following sequence of activities: 1. Defining the organisation's mission (its philosophy and purpose), 2. Formulating policies (guides of action to select objectives and strategies), 3. Establishing long- and short-range objectives, 4. Identifying strategic alternatives to achieve the objectives, 5. Selecting a strategy.

A concentration of efforts on the tactical aspects of the building process instead of the strategic aspects (as a way to improve the performance of projects) is not surprising in the building industry, and in a way it is understandable due to the characteristics of the organisations that work in that sector. Finally, even though reconstruction activities have a humanitarian and development component, they follow in many aspects the logic of regular construction (they are made by temporary multi-organisations that work in a project-by-project basis).

As demonstrated by Katsanis (1998), several firms in the building industry operate mostly on a tactical basis: "firms in the building industry (particularly those in architecture business) are tactically driven rather than strategically driven and they focus on short term actions". Furthermore, multiple cases suggest that strategic planning has not always been applied in organisations working in reconstruction projects (Dudley, 1988). Due to the nature of the building industry, architects, engineers, consultants and contractors work on a project-by-project basis, that is to say, participating in a project for only a limited period of time, namely: the duration of the project, after the end of which they direct their efforts elsewhere. In fact, it is not surprising that the tactical approach responds to four particular characteristics of construction projects:

a. By nature a project is "a sequence of activities with a beginning, an end and an identified objective" (Davidson, 1988). This means that the decisions taken by an organisation during its participation in a project have a short-term influence over the process associated with that project (even if the consequences in the building are almost permanent).

b. Most construction projects are unique; they respond to the environment and the participants that develop them. Contrary to other industries in which products and the modes of production are relatively standardised, in the construction industry

knowledge and experience gained in one project cannot be directly applied to the next one.

c. Construction projects are usually made by temporary multi-organisations (Davidson, 1988) that disperse once the project is finished. After one project is done, participants usually change partners to work on a new project. This means that preparing a strategic plan and accumulating expertise among all the participants is very difficult, if not impossible.

d. Temporary multi-organisations are made by individuals, companies or institutions that have their own long-term strategic interests (they might be explicit or not). Evidence shows that (i) the objectives of the project are not always compatible with the strategic interests of the participants; and (ii) those interests might also be sources of conflict in between the participants (Mohsini and Davidson, 1991, 1992; Mohsini et al. 1995), thus lowering the level of performance of the project 'team'.

Despite the limitations existing in the building industry regarding the implementation of strategic planning other than at the level of the individual participating firms, the importance and the potential of adopting the strategic approach cannot be neglected (Langford and Male, 2001).

In the light of this recognition of the differences between strategic and tactical views, it is regrettable that not only individual NGOs but also academics have concentrated on tactical decisions in the search to improve the performance of reconstruction projects. In fact, and despite all the possible benefits of adopting a strategic approach, even the major organisations in the field of reconstruction seem to have concentrated on tactical decision-making. In a World Bank publication called *Doing more for those made homeless by natural disasters*, Roy Gilbert provides "a good practice thumbnail sketch for [World] Bank Task Teams" in which a list of 31 guidelines is suggested in the form of a best practice check

list. This list includes a great number of tactical recommendations such as: "do not involve major land acquisitions", "follow good practice building and land-use standards from the outset", "respond quickly but with due diligence", "be emotionally committed, but sure that solutions are rational, relevant and efficient", "first attention to the poor that suffered most, but also to those suffering less through mitigation", "resist temptation to solve broader poverty problem through reconstruction alone". This list of seemingly rather naïve and elementary recommendations is accompanied by only three recommendations dealing with a real strategic level: (i) "Coordinate Bank's reconstruction with relief efforts, meeting with the relief agencies early on" (ii) "Involve existing housing agencies with good track records where they exist" and (iii) "Consider housing sector/market as a whole, especially that unsafe areas are not occupied".

Despite great efforts to improve the performance of projects with the community-based (bottom-up) approach, very little has actually been improved, as now will be shown. In reality, the low level of performance and the obstacles frequently encountered in reconstruction projects are still a preoccupation of researchers and practitioners. UNCHS explains that these obstacles are sometimes attached to obtaining affordable land, to the costs of materials and to delays caused by the training period required when using unskilled labour. Other common problems are associated with the lack of resources to build infrastructure and facilities and with the acceptability of the projects, which even with the use of local labour and resources is sometimes compromised by cultural reasons (UNCHS, 1989). Research proves that, indeed, major difficulties in the construction of new low-cost housing in developing countries are associated more with the provision of infrastructure and, often in parallel, with the creation of ghettos than with the construction of housing units themselves (Bhatt, 1999). In the case of relocation, lack of affordable land in areas located close to the sources of work (i.e. downtown or central areas) results in relocation to peripheral areas, where land is less expensive. Bringing infrastructure and services to these remote areas is usually extremely expensive and the new settlements have very little mix of use

and concentrate low-income residents together, increasing the formation of ghettos and facilitating segregation between economic classes.

Even in cases where the community-based approach has been rigorously implemented and the level of performance of the projects has been higher, the results of the initiatives have been limited to small-scale projects, with very little impact in the overall recovery of the community. Examples of this are found in the project conducted by the Cooperative Housing Foundation in San Salvador (project No. 21 in the database of projects) and in the one conducted in Bolivia (project No. 16 in the database of projects).

Even when self-help programs have been implemented and controlled in a systematic manner, still the low performance of projects has been criticised and reported due to aspects that are not necessarily related with the construction of housing units. Such is the case of the post-Mitch relocation project in Nueva Choluteca, Honduras (project No. 1 in the database of projects), which was qualified by The Washington Post as "an incomplete model town"; the study conducted by the journal proved that "new home for storm survivors in Honduras lacks basic services".

The low performance, limitations and obstacles found in reconstruction projects lead us to believe that even though the community-based (or bottom-up) approach might improve certain aspects of the project at the tactical level, it misses three important problems found in reconstruction:

Problem 1: Even though the community-based approach puts out a claim for the use of community participation as a way to attain maximum performance of projects, it rarely defines what is the type of participation that is required. This has probably contributed to the fact that, in reality, this participation is often limited to the involvement of end-users in the process of construction of units. In fact, this narrow approach to community participation was recognised by Da Silva (1980) in

housing provision in general in developing countries. According to Da Silva, even though spontaneous self-help initiatives cover the aspects of design, management, financing and construction, aided self-help initiatives usually concentrate exclusively on the participation of end users in construction activities. These activities frequently involve assembly of components and in some cases the production of construction components (usually bricks, tiles, doors, windows, etc). However, self-help as a principle can involve (or should involve, according to Da Silva) the participation of users in other aspects of the housing delivery process, such as design, financing and management of the project.

Even though it has been extensively argued about the importance of involving end users in the process of reconstruction, this partnering with local residents has rarely been one in which risks associated with decision making are involved or shared. In reality, this partnering (concentrated in construction activities) seems to have been adopted as if it were only a way of guaranteeing acceptability of the final product and of guaranteeing some level of transfer of best practice. However, as we will see later, knowledge in the project management field argues for the transfer and sharing of risks in complex projects, particularly where risks are high.

Problem 2: the limitations and obstacles found in most of the case studies of the database demonstrate that the performance of the projects is not that much affected by tactical aspects of the projects (such as the choice of labour force, the technology used or the tactical strategy adopted) but more by strategic aspects that permit the organisation to be prepared (even before the disaster) to respond to the requirements of the project. These strategic aspects seem to upset the development of the projects particularly in the activities related with the management of the project and the collection of resources; this is especially true when organisations responsible of the projects act as promoters (very often including fund raising).

Problem 3: In many cases, the performance of the project seems to be more affected by the hostile environment in which the project is developed than by internal aspects under the control of the organisation. These external aspects are related with the economic, social, cultural and political environments in which the organisations have to perform.

These three problems lead to the belief that the traditional approach to describing the performance of the reconstruction process (based on tactical aspects of the project) is not enough to respond to the particularities of reconstruction initiatives. A different approach seems then to be required. The basis for a different approach that considers the delicate relations between the projects and the environment can be found in the so-called "systems approach".

1.5. The systems approach

The systems approach has been used in engineering, social sciences, and in many other fields of science to explain the complex relations between the elements and the environment. In a "systems view" both the organisation and the projects are considered as systems that influence and are influenced by their immediate environments. A system is defined as a group of elements with relations between them and between their attributes. The environment of a system is all the elements outside the system which: (a) affect the system when they are changed, and (b) are affected by a change in the system (Davidson, 2001). In the case of post-disaster reconstruction, the project is particularly influenced by an even broader and more complex environment over which the organisations in charge of the project have very little or absolutely no control. Due to the nature of reconstruction projects, they are especially susceptible to a large environment that includes the political, economic, social and cultural contexts in which they are inscribed.

Fig. 1.6 represents the project (as a system represented by a blue box) which is embedded in an influenced and influencing environment (dark grey box) which is also influenced by an even larger environment over which the system has no control (light grey box).

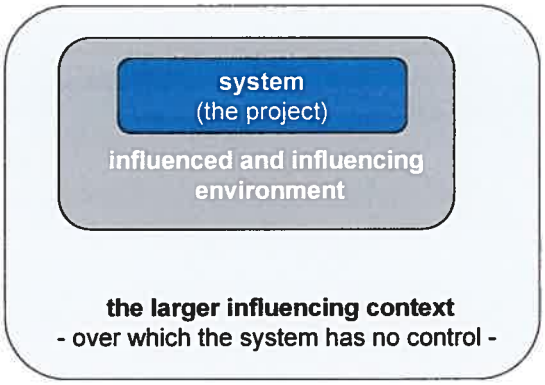


Fig. 1.6 The project in a systems approach

1.6. The hypothesis

Keeping in mind the obvious interest to improve the performance of reconstruction projects, but also considering the limitations and obstacles frequently found in current approaches to the understanding of performance, a different approach is suggested here. Building on the systems approach described above, this study hypothesises that the performance of reconstruction projects depends more on the influences of the environment and the strategic decisions made by the organisations than on the tactical aspects of the implementation of the project.

The study of the projects compiled in the database coupled with the analysis of previous research in the field of project performance permits to focus this preliminary hypothesis. In fact, the review of these projects and the results of studies conducted by Roberts (1972), Katsanis (1998), Mohsini (1985), Haviland (1984), Davidson and Abdel Meguid (1997) and others, suggests that the level of performance of the projects seems to be closely related with four variables concerned with: (i) the relations existing between the organisations participating in the project and (ii) the relations between the multi-organisation and its

environment. It is now clear what is the basis for the research hypothesis; which (as stated above) is:

In the context of an organisation adopting the roles of promoter and builder of a reconstruction project, the performance of the project (that is to say, the capacity to reach the objectives with the maximum optimisation of resources) depends to a great extent on:

1. *The level of integration and differentiation within the multi-organisation (that is formed to carry out the project), including inserting the project in a larger program of reconstruction;*
2. *The multi-organisation's strategic capacity to attract funding;*
3. *The multi-organisation's capacity to share and react to the risks of the environment (mitigating the risks or spreading them among various participants);*
4. *The level of user's responsibility for individual decision-making among a series of choices offered.*

Let us see some aspects related with each of the four variables of the hypothesis:

First variable: This variable argues that, as much as it has been shown that the level of integration and differentiation is a key aspect of the performance of regular building projects, it can also be a relevant (and sometimes underestimated) factor in the performance of post-disaster reconstruction projects. The complexity of reconstruction projects seems to require, in reality, not only a proper integration of participants with different expertise but also including (integrating) the project into a larger program or plan of reconstruction. Providing only housing units is insufficient to enable the community to recover and to deal with the broad problems of habitat. Integrating the housing component in a larger program of recovery (including other services and products) seems, therefore, to be mandatory for the success of reconstruction. Obviously, one organisation can

rarely have the expertise and resources to deal with all the aspects required for overall recovery (education, information, infrastructure, training, community services, etc,). Inter-organisational cooperation therefore plays a fundamental role.

Second variable: This one is related with the level of development of strategic planning, particularly in (i) positioning the organisation in the environment; (ii) developing a particular expertise and (iii) creating an appropriate image. These three variables seem to play a fundamental role in obtaining funds, which is a crucial activity in the role of 'promoting' the project.

Third variable: Difficulties and limitations in post-disaster interventions in poor areas are usually justified by the degree of complexity and the fact that the contexts where projects are conducted are particularly difficult and hostile. Sometimes the argument is "at least we did that, the situation was even worse before" (Martinez, personal communication). This – no doubt – is true. However, organisations working in reconstruction know (or are supposed to know) that the contexts are difficult and the risks very high. Therefore, for the purposes of project management they can be considered 'just' as cases in which uncertainty is high and therefore risk mitigation plans need to be developed before starting the project.

Fourth variable: This variable hypothesises that by determining what is best for local residents (that is to say selecting a product to give to beneficiaries) organisations assume extra risks in the project. In fact, this decision increases the risks associated with the acceptability of the project; which contradicts the spirit with which self-help construction is usually adopted. To emphasise this contradiction it can be suggested that selecting a self-help approach is usually (yet not necessarily should be) accompanied by selecting a construction model that is to be replicated by users. This approach is usually justified by the fact that it is very difficult to manage a mutual-aid self-help program in which each family

> "Universal standard shelter is not feasible because it ignores: [i] The high price and poor cost effectiveness of the product in the disaster affected country, [ii] the need to involve disaster survivors in satisfying their own needs, [iii]...climatic variations, [iv] variations in cultural values and house forms [v] variations in family size, [vi] the need of families to earn their livelihood in their houses, [vii] local capacity to improve shelter, [viii] the problems of obtaining suitable land at low cost on which to build such shelters, [ix] the logistical problem of transporting and distributing, [x] problems of appropriate technology".

The influence and importance of social aspects in the post-disaster housing process are discussed by Oliver-Smith in the article "post-disaster housing reconstruction and social inequality", published in 1990, in the journal *Disasters*. According to Oliver-Smith "greater attention needs to be paid to the issue of social stratification and its relationship to post-disaster reconstruction for social change and development."

A similar article by Souheil El-Masri "Learning from the People: A Fieldwork Approach in War-damaged Villages in Lebanon", published in the book *Reconstruction after Disaster: Issues and Practices* in 1997, documents how an understanding of both the social context and the people's needs is a fundamental pre-requisite to meet the challenges of reconstruction after a disaster. The article presents an approach called "reconstruction with people", where the response is based on an understanding of the social environment of the disaster and where the role of the end-users is articulated in the reconstruction program.

This approach to post-disaster housing reconstruction has also influenced the application of so-called appropriate technology. Contemporary theories in this regard encourage the practice of relying on training methods instead of technology transfer for the improvement of construction and the reduction of

builds a customised unit (i.e. with different technology, materials, design, etc). At the same time, self-help is regarded as a way to guarantee that people will 'like' the final products. Yet it should be obvious that, in reality, transferring the responsibility of decision making to users (that is to say, the responsibility to select the products they like - or they prefer - according to their own needs and expectations) is a powerful way to reduce the risks of non-acceptability; note that this does not necessarily contradict the possibility of using a self-help approach. This variable is closely related with the previous one as both relate to the multi-organisation's capacity to mitigate (share or transfer) risks. Even though this particular variable could be seen to be close to the tactical management of the project, it has major repercussions in the structure of the responsible multi-organisation (reaching even beyond project-by-project situations) as it determines the type of relationship that needs to exist between the organisations and the end users. This relationship can then, potentially influence the strategy of the organisations responsible for conducting the project.

1.7. Previous work in the field

The hypothesis of the study leads us to consider four important notions closely related to the project management field: (i) procurement, (ii) organisational integration and differentiation, (iii) risk management and (iv) performance.

1.7.1. Procurement

Finding the relations between the organisational design of a project and its performance is not new in the field of project management. In fact, several authors have developed the concept that a direct relation exists between the structure in which the client (or build owner) arranges the participants of the project (that is to say the procurement strategy) and the overall results of the project. Mohsini and Davidson (1991), Walker and Hampson (2003), Ogunlana (1997), Abdel Meguid (1997) and others have examined the effects of using non-

traditional approaches to procurement in both the private and public sectors, concluding that – very often – non-traditional strategies lead to uncertainty and, therefore, to additional difficulties in the process.

Several of the documents presented in the CIB conference on procurement and innovation held in Montreal in 1997 argue that a direct relation exists between the procurement strategy chosen by the client and the capacity of innovation within the multi-organisation (Davidson and Abdel Meguid, 1997). Davidson (2001) concludes that "any building system – with its appropriately designed organisation – must fit into the broader environments (a) of the building industry in the country or region in question, and (b) also fit into the political, social and economic environment surrounding the industry [..] a technical innovation – particularly a major one like industrialisation – must be accompanied by systematic organisational redesign if it is to succeed". Similar documents also highlight the relations between the procurement strategy used and the perception and influence of risks (Akintoye and Taylor, 1997).

The main lesson learned from all this previous work is that a careful organisational design is required for the improvement of performance in construction projects. Doubtless, this notion perfectly fits post-disaster reconstruction where the assembly of participants usually happens in a turbulent and chaotic environment, and where temporary multi-organisations are particularly complex due to the different nature of participants and the international character of the projects.

1.7.2. Organisational differentiation and integration

As demonstrated by Roberts (1972), successful inter-organisational design is correlated with a high level of integration and differentiation. Even though the two terms seem contradictory, Robert's research shows that together they play a fundamental role in the performance of construction projects. Differentiation

refers to the clear distinctions and statement of roles, whereas integration depends on the proper coordination of resources between different organisations. In the general construction industry, the level of integration and differentiation depends on the procurement strategy applied by the client. However in reconstruction, the complex procurement arrangements are not necessarily controlled by a single institution (i.e. a team leader) and therefore integration and differentiation might not be sufficiently defined. In fact, several of the projects of the database lead one to believe that the lack of a unified procurement strategy has a negative impact in the performance of reconstruction projects.

The work conducted by Roberts (1972) applies a notion that was developed in the context of industrial and commercial organisations to the context of multi-organisations. It is well known in the field of organisational management that the level of response of an organisation to the environment in which it is inscribed depends of the level of integration and differentiation between the internal units of the company (Lawrence, 1967; Lorch and Lawrence, 1970). In the case of multi-organisations, an internal structure for each participatory organisation, adapted to optimise its performance within the context of multi-disciplinary human resources and relations with other participants, is crucial. In the case of reconstruction projects, this implies the consolidation of the capacity to deal with multidisciplinary problems that go beyond the construction of buildings, including – for example – dealing with financial and legal complex situations. It also implies creating relations with the beneficiaries and local organisations. In fact, a general consensus exists among experts that a direct and constant relation of the organisation in charge of the project with the residents increases the acceptability of the project. It is well known in reconstruction literature that pre-disaster relations of the organisation with local residents contribute to the success of the project (Jigyasu, 2002; Juyaraj, 2002; Sivaji, 2002).

1.7.3. Risk management and the effects of the environment (particularly in international projects)

Post-disaster reconstruction projects demand the intervention of local and international organisations. This means that foreign organisations (such as donor bodies, NGOs, partners, construction companies and suppliers) are challenged with additional difficulties when participating in international contexts. International projects of construction represent increased risks for organisations, even when the conditions in which the projects are developed are not as critical as in post-disaster scenarios (Langford and Male, 2001).

In the project management field, a distinction is made between risks and opportunities. A *risk* is defined as the possibility of suffering harm or loss (a negative consequence), while an *opportunity* corresponds to a positive outcome (PMI, 1996). Three types of responses can be adopted by the project leader(s) when risks have been identified:

1. Avoidance: eliminating a specific threat, usually by eliminating the cause or the risk event
2. Mitigation: reducing the expected risk event value
3. Acceptance: accepting the consequences of the risk (PMI, 1996)

In the context of multi-organisations, the mitigation of risks is sometimes associated with risk sharing or risk transferring among participants. In construction projects, partnering has been regarded as a beneficial way of sharing risk between the parties (Black, Akintoye and Fitzgerald, 2000). Risk sharing is defined by David Moore (2002) in *Project Management: Designing Effective Organisational Structures in Construction* as "a diminution of a risk by sharing it with others, usually for some consideration"; whereas risk transfer corresponds to "a contractual arrangement between two parties for delivery and acceptance of a product where the liability for the cost of a risk is transferred from one party to another".

The major risks for international construction have been identified by Langford and Male (2001) as being related with the environment in which the projects are conducted. According to Langford and Male, it is important to consider - in this environment - two dimensions: (i) the economic performance assessment of the country and (ii) the political risk. Besides, in a strategic plan analysis, other aspects need to be also considered: the project size and potential, the costs and resources, location, language, market similarity (with the original location of the organisation), project funding, legal and fiscal aspects, assessment of the client, the indigenous construction environment and competition. All these aspects can potentially disturb the development of the project and, therefore, organisations need to carefully consider them while assessing the viability of entry into a new context. From the analysis of these variables, organisations can assess the country's attractiveness and the organisation's competitive strength in the country, and several strategies can then be adopted: joint venture, enter, project-by-project or no interest (see Fig. 1.7).

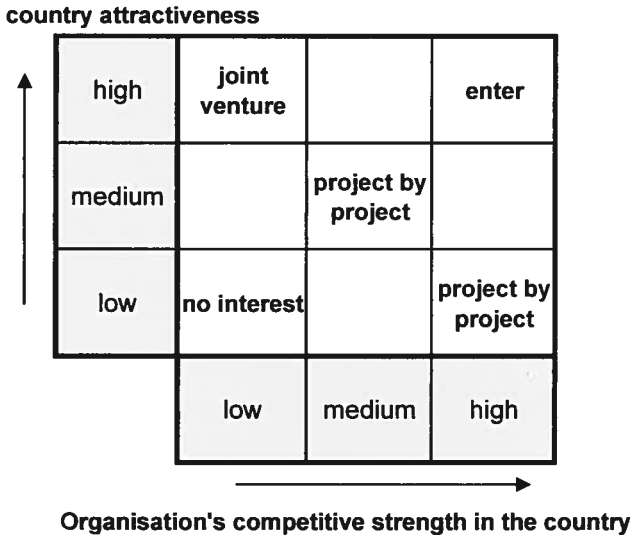


Fig. 1.7 Based on Langford and Male (2001), the matrix of country attractiveness and organisation's competitive strength

In Langford and Male's approach, the strategy adopted needs to assess two considerations: strategic positioning and competitive intelligence. Strategic positioning means "performing activities that are different from competitors' or performing similar activities in different ways". The information used to define the strategy is known as: "competitive intelligence" which is defined as "the activity of monitoring the environment external to the firm for information that is relevant for the decision-making process in the firm" (Langford and Male, 2001).

The review of the debate about reconstruction approaches and the review of the projects compiled in the database shows that four variables are constantly evaluated in reconstruction projects:

1. Speed of construction;
2. Respect of traditional culture: values, know-how, technology, heritage, etc.;
3. Use of local resources: particularly local labor force and local materials;
4. Capacity to improve local development: reinforcement of local institutions, creation of employment opportunities, improved construction practices, etc.

These four variables are closely related to seven potential sources of risks for reconstruction projects; indeed, it can be said that the following risks are major recurrent threats for every reconstruction project:

- Non acceptability: the outputs of the project not being accepted by end-users. Research conducted by UNDRO (1982) demonstrates that even in extremely poor communities, social, cultural and typological values play a fundamental role in the acceptability of housing solutions
- Time delays: the outputs of the project being provided late, when spontaneous solutions have been already conducted by users.
- Poor adaptation to local conditions: insufficient adaptations of the outputs being offered to the weather, geographical conditions, cultural values, etc;

- Transport difficulties: extra costs and obstacles in the transportation of pre-fabricated units, components or even construction materials.
- Influence of the political environment: negative effects in the development of the project due to unforeseen changes in national policies, or due to non forecast limitations of the legal environment of the project.
- Inadequate resistance to subsequent disasters: particularly in later additions and changes made to the original units provided by the project.
- Lack of funding: difficulties to collect funds and find economic support for the initiatives.

UNDRO (1982) also identifies major risks (based on frequent problems) associated with post-disaster relocation:

1. "Relocation away from urban centers is largely motivated by the availability of cheap (and often undesirable) land.
2. Distances from jobs and the costs of commuting are a cause of either a reduction of income, or missed opportunities for employment.
3. Urban services are frequently missing (schools, hospitals, shops, markets, etc.)
4. Utility systems such as water, sewerage, and electricity are often insufficient, or non-existent, for lack of planning and preparation.
5. Few assisting groups are equipped to master-plan this type of development as part of relief management. The situation is worsened when the local authorities also lack planners, architects and administrators, and also capital resources.
6. If the economic and environmental situation worsens beyond endurance, people migrate back towards their original sites and jobs, leaving a vacuum behind them, quickly filled by rural-to-urban migrants, thus compounding the problems of uncontrolled urbanisation.
7. There are, [in some financial arrangements] problems of default and difficulty to pay instalments on time, creating, for example, problems of overcrowding in order to obtain additional rent.

8. [...] Settlements outside municipal boundaries subsist in a kind of limbo, with neither the local nor the regional authorities willing to bear the costs of development and maintenance.
9. In developing countries, urban infrastructure costs are extremely high, the per capita costs far exceeding the per capita capacity to amortise such costs. The price of serviced land has risen out of all proportion to the costs of [other] resources and services, and especially in relation with wages." (UNDRO, 1982)

1.7.4. Performance

Different definitions of project performance have been proposed; frequently emphasising different aspects of the desired outcomes. In general, the degree of success of a project cannot be defined without determining the traditional constraints of a project: the duration, the budget and the quality of the product produced. These three components have been considered in the traditional approach to performance, resulting in the trilogy of evaluation that considers the individual performance of cost, schedule and quality. An extra dimension has been proposed by Kliem and Ludin (1992) to represent the tacit aspects related with the people (particularly users' satisfaction). This four-fold approach is particularly useful for understanding the delicate relations between housing projects and the end users. Indeed, sufficient literature exists to prove the importance of users' participation and acceptance of a project in considering the performance of housing and international development projects in developing countries. However, this three or four-fold approach fails to consider the important relations between the multiple participants that develop the project (on the 'supply' side) and it also fails to take into account the relations between them and the environment.

An approach based on projects developed by multi-organisations seems to be required. Defined by Roberts (1972), in the context of the analysis of multi-

organisations, performance is "the level of utilisation of resources which results in the maximum benefits to all participants not considered separately, without resorting to exploitation". Roberts also proposes that "benefits gained by one organisation at the expense of another are not conducive to high overall performance". In this definition, performance has two aspects: (i) effectiveness: the level of attainment of the formal objectives of the organisation or multi-organisation within the prevailing organisational conditions; and (ii) efficiency: a measure of the amount of resources used to produce a unit of output".

Confirming this approach, Mohsini (1985) demonstrates that "the performance of a project is not merely a function of input resources, but instead of the state of collaboration which exists among the project team members in fulfilling their tasks".

Inter-organisational conflict has been regarded as a form of low performance in the building process. Gardiner and Simmons (cited by Abdel Meguid, 1997), define conflict as "any divergence of interests, objectives or priorities between individuals, groups, or organisations; or non-conformance to requirements of a task, activity or process."

As it was explained before, the concept of multi-organisational differentiation and integration was associated – in the study conducted by Roberts – to the level of performance of a project. Treated with different names, Handy (cited by Abdel Meguid, 1997), also identifies different situations (related with multi-organisation differentiation and integration) in which conflict can arise:

- Formal objectives overlap
- Role definitions overlap
- Unclear contractual relationship
- Simultaneous roles, and
- Hidden objectives.

In a similar manner, Mohsini (1985) also identifies the following factors that influence the performance of the project organisation:

1. Domain consensus: The greater the clarity of scope of participation and the degree of specialisation the better the project performance

2. Availability and access to information: The more successful the exchange of information the better the project performance.

3. Interdependence of tasks: The greater the coordination and cooperation in dependent tasks the better the project performance.

Building up on the work conducted by Mohsini (1985), Roberts (1972) and Haviland (1984), Abdel Meguid (1997) concludes that "maximising the overall project performance means a high level of coordinated decision making, which in turns means attaining the lowest possible level of inter-organisational conflict (i.e. conflict between participating task-organisations)".

1.8. Wrap-up

As it has been discussed in this chapter, enough reasons exist to believe that a different approach to looking at the performance of post-disaster reconstruction projects is required. The basis of a new approach can be found in previous studies conducted in the field of project management in the regular building industry, where the notions of performance and organisational design have been studied by a stream of research of which one of the earliest examples is Roberts' in 1972 and to which several researchers (Davidson, Haviland, Abdel Meguid, Mohsini, Katsanis and others) have contributed since then. It is possible now to knit together this knowledge (that in some cases was reinforced by knowledge transferred from other industries to the building sector) with the specific problem

of post-disaster reconstruction. However, as we have shown, this new approach requires defining some specific terms of disaster management such as 'reconstruction' and 'vulnerability'. A hypothesis based on a systems approach of the reconstruction process is proposed after the review of a number of cases described in the literature and some others visited and reported with first hand information. The following chapter develops the methods required for the validation of the hypothesis.

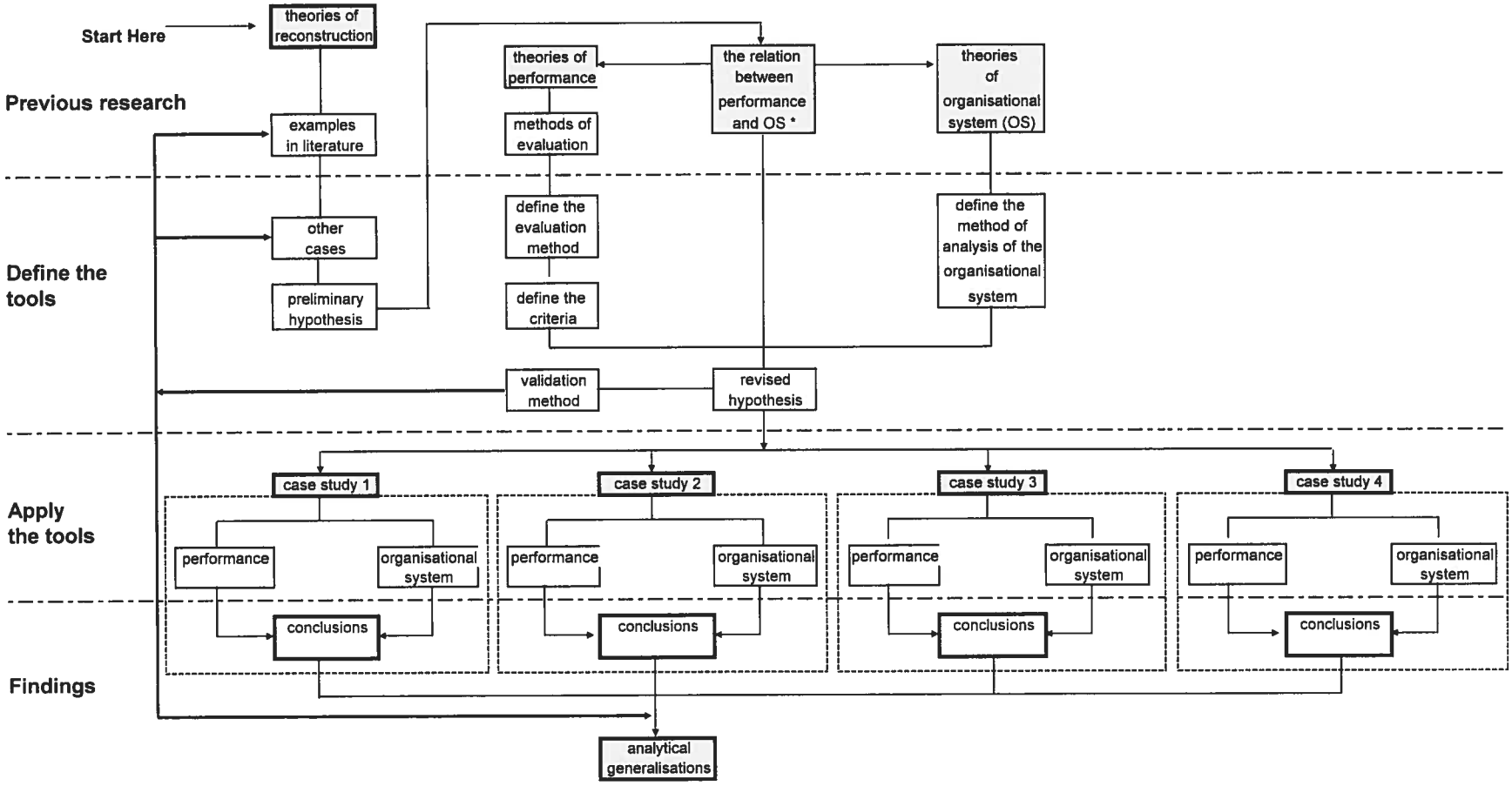
Chapter II, Methods

Chapter II, Methods

The hypothesis of the study requires developing research methods at different levels, from the general design of the research to the detailed methods used to assess the performance of a project and analyse its organisational system. The methods developed here combine the methods used in (i) the performance evaluation of the general building industry, (ii) the international development field and (iii) project management studies. Taking advantage of existing methods permits to adapt them to the particular needs of the field of post-disaster housing reconstruction.

2.1. The design of the research

The characteristics of the case study methodology make it a suitable approach for the study of the performance of reconstruction projects, particularly if a systems approach is used. Due to the advantages of case study methods in the field of social sciences, it has been widely used to study subjects such as project management and construction project performance. As proposed by Robert Yin (1984), case study methods develop an empirical approach to research of a contemporary phenomenon within its own context. It is particularly useful when the researcher has little or no control over the behaviour of the most important elements under study, and therefore the researcher is not able to manipulate the variables. Contrary to scientific experimentation, case studies analyse the phenomenon in its own environment considering, as much as possible and in a holistic manner, the elements of the context that interact with the phenomenon under study. Qualitative data and observation are considered here to be valuable to the study and understanding of the variables, particularly in complex situations where individual components cannot be isolated from the whole.



* Organisational System

Fig. 2.1 Research methods diagram

All of these characteristics appear compatible with the systems approach used here and as proposed in Chapter I (section 1.5). In fact, considering the phenomenon under study (the process of reconstruction, considered as a system) in its own environment and investigating the relations between that system and the environment is both a case study 'attitude' and a systems approach 'premise'. As we will see in this section, this approach is useful if some rules are carefully followed and some strategies are used to be able to relate the empirical research to the existing body of knowledge.

Considering the different types of research, as proposed by Davidson (notes de cours 2001), finding the relations between organisational design and performance constitute what is called "fundamental research". Contrary to "applied research" which seeks to find a solution to an urgent problem, fundamental research seeks an understanding of the world through a theoretical or empirical approach. The empirical approach – which becomes our concern for this study – is developed through an observation of reality and permits one to validate a hypothesis linked to an existing theory or field of study. Keeping this in mind, the design of the research needs to clarify (i) the method used to study existing theories and approaches, (ii) the way to develop the empirical observations, (iii) the methods of validation of the hypothesis and (iv) the means to obtain information and to draw conclusions.

Figure 2.1 represents the methodological process used for the research. Following Yin's case study research method, this process proposes four major methodological stages: (i) the review of previous research; (ii) the definition of tools; (iii) the application of the tools selected and (iv) drawing together findings and arriving at conclusions. As proposed by Yin (1994), this is not a linear process but rather a cyclic exchange between the experimental research and previous knowledge existing in the field.

Within this approach, the research began with the review of the main theories and approaches in post-disaster housing reconstruction, followed by the analysis of previous examples reported in the literature. Following this, new cases of housing reconstruction were visited and, through observation and analysis of them, a preliminary hypothesis was suggested. This preliminary hypothesis stressed the relations between the performance of reconstruction projects and the organisational design of them. This relation was not totally clear at this stage; however, its analysis proved worth doing and led to the review of the main concepts and approaches (theories) of both of the aspects under consideration: performance in the building industry and organisational systems.

The review of the literature about these two main subjects demonstrated that, in fact, several relations have been proposed - and validated - between the performance of construction projects and the organisational design of them. However, very few indicators were found about these relationships in post-disaster reconstruction projects. This very fact proved that a methodology of analysis of those particular aspects did not exist in the field of reconstruction and that the methods used in other fields would need to be adapted before being applied to post-disaster housing projects. Several methods of evaluation were studied to develop the evaluation system finally used. As we will see in this chapter, the definition of the evaluation *criteria* was one of the most demanding and time-consuming elements of the development of the evaluation *method* that was finally used.

Consequently, in parallel to the study of methods to determine the performance of projects was the study of the methods used to represent and analyse organisational systems. In this process, methods from the project management field were borrowed and adapted to the post-disaster scenario. Once the methods were clarified, a revised hypothesis was used to validate the scope and relevance of the research. Following Davidson's natural cycle of research (notes de cours, 2001), this validation was made at different levels, at different

moments and for different lapses of time. The whole cycle of research, which includes revising the theory, stating the hypothesis, designing the research, choosing the methods, doing the research, analysing the results and drawing conclusions, was conducted in one hour, in one day, in a week, etc. before doing the final study. This exercise (represented in figure 2.1 by the arrow that creates the first loop) permitted, at several stages, to refine the hypothesis and the methods.

Once both the hypothesis and the methods were refined, the research was conducted on the selected case studies. Both the performance and the organisational system of each of the projects were studied to draw individual conclusions for each case. Finally, as proposed by Yin, these conclusions were compared with the cases studied in the literature and visited in the preliminary part of the research in order to be able to draw "analytical generalisations", as suggested by Yin (1984).

Being at the core of the case study methodology, the analytical generalisations permit to put in context the results of experimental research and to give continuity to existing knowledge. Analytical generalisations compare the results found in the case studies with previous results found in the literature. Through this comparison, the results of the study can be proved 'standard' (if the results correspond to the findings of similar studies) or 'exceptional' (if the results are innovative). This comparison permits either to reaffirm and consolidate an ongoing body of knowledge or to define an alternative position that contradicts general assumptions.

As previously explained, determining the performance of a project implies a process for its evaluation. The following section dwells on the subject of defining the appropriate method to determine the performance of the selected case studies.

2.2. Project evaluation

A large number of approaches exist in the field of evaluation research and some consensus has been agreed in both methodology and objectives. However, project evaluation methods are still controversial in the fields of urban projects, in the building industry and in international development. According to Appasamy (1983), this controversy has led to different approaches for the evaluation of urban projects: 1. The evaluation of the system vs. the evaluation of results, and 2. The evaluation based on qualitative methods vs. the evaluation based on quantitative methods. Belkacem Zaouali (1994) also shows that in the field of international development projects, different methodological tendencies and rationales of evaluation have followed, in the last forty years, the ever-changing approaches to development and international aid.

Making a synthesis of the extensive list of evaluation methods (ranging from those which are used for the regular building industry to those which are used in the international development fields) represents a particular challenge for this study. Instead of presenting the different approaches commonly used and justifying the selection of one of those, we suggest here to take the readers through the process of building up the methodology of evaluation as it was developed during the study. Readers will note that in building up this method, some components from existing approaches were used and many other were *adapted* rather than adopted. At the same time, the review of the pertinent knowledge and background found in the literature will be made explicit.

However, it is important to clarify first the type of evaluation that this study is concerned with. This method needs to match the following criteria:

a. It is conducted when the project is finished and it is not conducted by the institution(s) that created it. For future reference, and following the term used

by some authors this type of evaluation will be referred as "ex-post evaluation" (Zaouali, 1994; OECD, 1986).

b. The research method required here is not necessarily a management tool. This approach might therefore be different from the one used in self-performance evaluation methods which, in the case of development agencies, seeks to improve in-house management practices through a participatory and empowerment approach (as suggested by OECD, 1986; ILO, 1996; Gagnon, 1995)

c. It concerns the evaluation of reconstruction *projects*, not the evaluation of reconstruction *programs*. According to Davidson (1988), a project is "a unique operation that has a start, a finish and a limited duration and a defined objective". In comparison to projects, programs are defined here as long-term initiatives with broader objectives and less clear boundaries over time. As defined by the International Labour Office, a program is composed by several projects that are linked to the achievement of higher common objectives (ILO, 1996).

d. It is not an evaluation of an institution. Even though this method of evaluation examines the role of the organisations, management evaluation or auditing (as defined by OECD, 1986) is outside the scope of this study.

Keeping this in mind, two fundamental decisions need to be clarified: 1. what to evaluate?, and 2. how to evaluate?

2.2.1. What to evaluate?

Due to the complexity of the projects involved with international development (reconstruction after disasters usually falls into, or forms part of one of those), and the constraints in time and resources, evaluators "cannot evaluate

everything" (Zaouali, 1994). Accordingly, The Organisation for Economic Cooperation and Development (OECD) advocates that "the evaluation process requires defining the questions that are to be answered" (OECD, 1992). This implies defining what the evaluation is for and what kind of information the evaluator is looking for.

It could be thought that evaluating a project corresponds to evaluating the product or service that the project developed (or attempted to develop). Then, the question to be asked would be: Was the product or serviced offered 'good'? However, we will demonstrate here that evaluating the product or service says very little about the performance of the project at large. We will clarify this with a simple example of the evaluation of an imaginary project that attempted to improve the quality of the water that people drink. Responding to the hypothetical fact that people use containers that pollute the water put in them, the project attempted to produce and donate ceramic cups to improve the quality of water consumed by the users. Even if a large quantity of cups was produced (let's say 1,000), and the product was considered of "high performance" (according to certain indicators of cups performance, tested in the donor's industry), the performance of the project was affected by aspects related to the process, not to the product itself. Here are some possible scenarios:

1. To produce the 1,000 cups, materials and human resources (the inputs) for the production of 1,200 cups were used. In this case the resources were not optimised.
2. Even though 1,000 cups were produced, the targeted production was 2,000 cups. In this case, only half of the targeted production was achieved.
3. Users did need a cup but the cups were offered too late when they had already produced their own improvised cups that pollute the water. Timing failed.

4. When considered of "high performance", the cups were tested in a different environment. In the new environment, the particular use people make of cups make them extremely fragile. In this case the quality of the product was not well adapted to the "new environment".
5. The cups were offered to a certain group of users who do not drink in cups but prefer to use glasses; while the users that really needed the cups did not receive the cups offered.
6. Nobody really used the 1,000 cups. The users acquired the cups but in reality, due to certain cultural reasons, users did not use the new cups but continued using their old cups. In this case users did not accept the project.
7. Users already had ceramic cups at home, and therefore the new cups were not necessary. It was not a good idea to produce cups in the first place. It would have been better to produce, for example, water tanks to replace the non-appropriate tanks that people use and that also pollute the water.
8. The project attempted to produce 1,000 cups and in fact, 1,000 cups were produced. However, 100,000 people drink from containers that pollute the water. In this case only one percent of the users improve the quality of water consumed. In another example of the same difficulty, 1,000 cups were produced but only 400 were needed.
9. Using a proper cup does not improve the quality of water anyhow because the water comes already polluted.
10. The media, in order to attack the project for political reasons, gave negative advertising to the use of the new cups arguing that they modify the nutrients water normally provides. This caused the users that needed and acquired the cups to end up breaking them to be sure they were not used.

These hypothetical examples show that not only aspects related to the **product** need to be examined. Also aspects related with the **process** prove to be crucial.

The ten cases can then be translated into ten main aspects that need to be examined and, by analogy, ten corresponding questions that need to be answered in the evaluation of reconstruction projects:

1. Efficiency: were the local and external resources optimised?
2. Results: were the targeted outputs attained?
3. Timing: were the outputs available at the right time?
4. The quality of the product: is the product good in the environment in which it is going to be used?
5. Pertinence: were the outputs available to the right people?
6. Acceptability: did the local community use the outputs/ services offered?
7. Strategy: did the outputs that were offered correspond to the needs of the population?
8. Scope: how much of the real needs was covered? Is that percentage satisfactory?
9. Impacts/objectives: did the project reduce the vulnerabilities of the population?
10. External aspects: how did the environment affect the results of the project?

Note that similar lists of variables have been suggested by the organisations that have emphasised process evaluation over product evaluation. OECD suggests the following list of variables: rationale, objectives accomplishment, impacts/effects, general results, viability, alternative solutions, and lessons (OECD, 1992). In the same way, Zaouali suggests the following 'levels' of evaluation: pertinence, efficiency, results, impacts and durability (Zaouali, 1994). The International Labour Office (ILO, 1996) suggests the following aspects and questions to be considered:

Effectiveness: To what extent has the project achieved its objectives and reached its target groups?

Efficiency: Do the expected project results continue to justify the costs incurred?

Relevance: Does the project continue to make sense?

Validity of design: is the design logical and coherent?

Causality: what specific factors or events have affected the project results?

Unanticipated effects: is the project having any significant (positive and/or negative) effects which were not foreseen?

Alternative strategies: is there, or should there have been, a more effective way to address the problem(s) and achieve the objective(s)?

Sustainability: What is the likelihood that project benefits will be sustained after the withdrawal of external support?

Readers will note that the questions are similar yet phrased in a different manner. However, the example of the cups has been specially adapted for our interest in reconstruction to show the aspects with which we are particularly concerned. This is achieved by highlighting three aspects commonly challenged in reconstruction projects: time-efficiency, pertinence and acceptability.

Even though the previous examples make it seem obvious that several aspects of the process are fundamental to the performance of the project, the evaluation methods commonly used in the building industry pay little attention to their assessment. Let us consider, for example, some of the evaluation practices most commonly used in the building industry: (i) administrative audit, (ii) post-occupancy evaluation, (iii) users' satisfaction, (iv) environmental impact studies, and (v) human ecology evaluations.

In a systems analysis, every construction project can be illustrated as shown in Fig. 2.2. The diagram shows that construction projects are developed by organisations that conduct a process to produce a product, which is, at the end, offered to a group of targeted users. The organisations, the processes, the product and the users affect - and are all affected - by the environment.

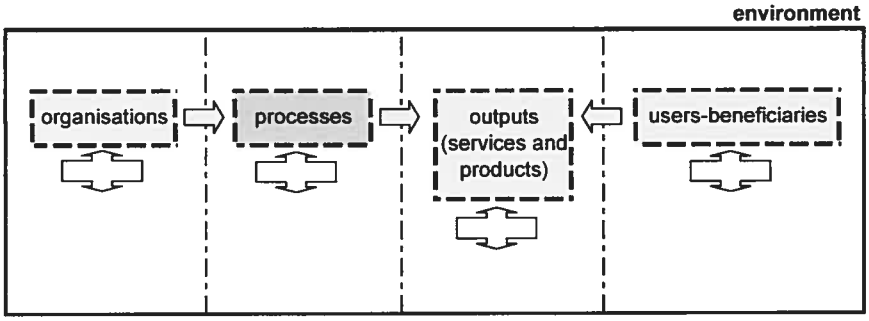


Fig. 2.2 Construction projects diagram. In a systems analysis, projects are represented as linked elements that affect and are affected by the environment.

Fig. 2.3 shows that the five evaluation practices commonly used in the building industry concentrate on the performance of individual aspects of the construction project diagram. Similarly, some aspects are not fully considered in those methods:

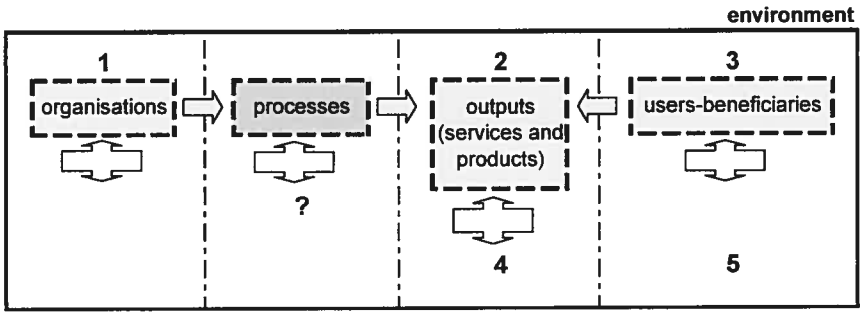


Fig. 2.3 Evaluation methods positioned in the construction projects diagram.

1. Administrative audit: As explained by Appasamy (1983) it is useful as a management exercise to study procedures, organisational structures, methods of implementation, etc. Even though it permits improving management procedures, it represents other limitations when evaluating the process. As

explained by Appasamy "one can be extremely proficient in rearranging the deck chairs of the Titanic without realising that the ship is about to sink". With this approach it is difficult to know if ultimate objectives have been met, as this kind of audit does not question the validity of the strategy. Audits concentrate in the performance of the organisation and the processes from any of the involved corporations' point of view.

2. Post-occupancy evaluation: A constant development has been obtained in this field when looked at from the performance requirements and performance-based specifications point of view to evaluate buildings and facilities as finished products. It concentrates in the performance of physical components; the performance is measured according to the indicators chosen for each of the subsystems of the building and the relationships between them (Ehrenkrantz, 1988). It does not question the validity of the strategy or the objectives.

3. Users' satisfaction: this evaluation concentrates in the users' perception of the project. Usually the evaluation is conducted through questionnaires and surveys among the targeted population. The performance is considered as a variable of the level of satisfaction of users. Nevertheless, it does not question the strategy used, the optimisation of resources, the management approach, or the organisations' approach to the project. In other words, people can be extremely 'happy' with 500 houses built without knowing that the units were built with the resources that are usually used for building 1000 houses.

4. Impact studies: They usually measure the impact of the project in the environment. It might correspond to impacts on the natural environment, in the market or in social groups (Social Impact Assessment – SIA). Impact studies are usually less concerned with the sequence of activities that were conducted than with the permanent effects of the project.

5. Human ecology-based evaluations: this approach concentrates in the relations between the humans, the natural environment and the built environment. According to Machado (1989) the evaluator is concerned with two questions: (i) how does the built environment relate to the natural one? and (ii) how humans relate with the built environment?. However, none of these questions challenge the strategy used or validate the approach followed in the project.

Fig. 2.3 shows the relative position in the general diagram (shown in Fig. 2.2) of each of the evaluation methods described earlier considering the aspect that is emphasised in each one of them. The diagram shows that the analysis of the process (the darker box) is not fully emphasised in the methods currently used (a question mark indicates this gap). Even though a different method is thus required, the tools to develop it are not found in the evaluation of construction or urban projects. As we will see, the basis for process evaluation can better be found in the field of international development projects. Keeping this in mind, let us now consider the second question proposed earlier: How to evaluate?

2.2.2. How to evaluate?

Edward Suchman, who established several of the principles of evaluation that have been used since the publication in 1969 of his book on evaluative research, argues that "inherent in evaluation is the process of assigning value to some objective and then determining the degree of success in attaining this valued objective." Suchman adds, quoting Riecken: "evaluation [is] the measurement of desirable and undesirable consequences of an action that has been taken in order to forward some goal that we value". These two statements imply that evaluation requires (i) questioning the objective and (ii) determining the consequences of its implementation. Zaouali (1994) demonstrates that these two particular aspects have been reconsidered in the evaluation of international development projects over the last 10 years. In fact, a refined tool of evaluation

has been developed by international agencies to deal with this aspect. This tool is called the Logical Framework Analysis or "Cadre Logique" and it is today the most commonly used evaluation method in international development projects in Europe, Canada and the United States.

Taking advantage of the developments obtained in results-based management, the Logical Framework Analysis (Log. Frame.) appeared in the seventies as a tool to overcome the difficulties found in project evaluation. With the importance given to a participatory approach to development, where users played a fundamental role in the process, the traditional evaluation of projects became obsolete. If the 'triangle' of evaluation that considered the performance of a project in terms of costs, schedule and quality was sufficient to evaluate regular building projects, it proved insufficient to assess the effects of the project in the targeted population of international development projects. Therefore, a fourth dimension for measuring the role of participants and the involvement of users in attaining the objectives became necessary.

However, this also meant reconsidering the sequence and life cycle of the process, which resulted in tracking down the cause-effect relationships between different stages of the project. The Logical Framework Analysis was first developed in 1969 by the United States Agency for International Development (USAID). Since then, it has been largely used by different organisations including the Canadian International Development Agency (CIDA) and International OECD. The stages into which a project is subdivided have received different names and interpretations. However, as a constant, the Logical Framework considers at least four or five stages placed in a time-sequence of cause-effect:

The first one, usually called *inputs*, in which the resources and/or the activities that exploit the resources, are considered.

The second one includes the results of those activities. It involves describing the products and services delivered taking into account the consumption of resources. This stage is usually called *outputs* or process.

In the third one intermediate *results* are explained. Those results correspond to the immediate effects of the products and services offered; these effects can be measured as the transfer of technology. This stage is usually called *results* or outcomes.

The fourth one is the one in which the long-term effects are explained. This one usually corresponds to the final goal of the project. In some cases, an intermediate stage can be considered to distinguish between the medium-term objectives and the long-term effects or *impacts*.

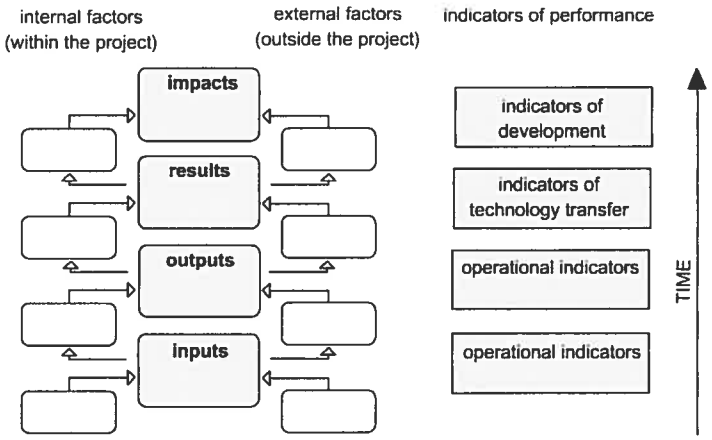


Fig. 2.4 Aubry and Hivon's Logical Framework with only one space for medium-term and long-term impacts.

However, this approach represented some limitations. As can be expected, the relationship between causes and effects within the project scope might be altered by elements of the context. To solve this limitation, recent revisions of the Logical Framework have included other aspects such as (i) risks and enablers (CIDA, 1997) and (ii) internal and external factors (Aubry and Hivon, 1994, see Fig. 2.4). In both cases, these aspects permit highlighting elements of

the context that might influence the performance of the project. Similarly, later versions of the Log. Frame. have also included "important assumptions" which are defined as "conditions which could affect the progress or success of the project but over which the project manager has no control" (Wiggins and Shields, 1995).

The assumptions are usually determined by the expectations of the project manager or the evaluator. In the case, for example, of an agriculture-development project, the project manager might assume that if there is an increase in the distribution of fertilisers (an output of the project), peasants will use the fertilisers as required (the assumption) and thus there will be an increase in yield per hectare (the effect). If that effect happens, and the market demand is stable (another assumption), it will lead to an increase in agriculture productivity (goal or impact). If the influence of religious values affects the use of fertilisers and peasants do not use them as required, the effect might not happen. In this case, an external influence (over which the system has little control) affects the performance of the project. Likewise, if the effect happens, but the demand for agricultural products decreases, the final goal (impact) might not be attained.

In sophisticated versions of the Log. Frame., a rather useless distinction between the so-called horizontal and vertical Logical Framework Analysis has also been proposed (Wiggins and Shields, 1995). The so-called vertical Log. Frame. is usually associated to the definition of cause-effect relations, assumptions and uncertainties (within or outside the project). The so-called horizontal Log. Frame. (the difference between horizontal and vertical do not correspond to the position of the boxes in the diagram) corresponds to an evaluation tool to measure the performance of inputs, outputs, effects and impacts. Adding this second dimension (the horizontal Log. Frame.) leaves open the question of the indicators of performance that need to be explored and defined. As suggested by Aubry and Hivon's model (1994) this distinction is not

necessary as his model compiles both the sequence of cause-effect relationships and the indicators of evaluation (see Fig. 2.4).

2.2.2.1. The problem of unexpected outcomes

The Logical Framework model, as suggested by Aubry and Hivon (1994) and CIDA (1997) illustrates easily the cause-effect relationships that can be expected and therefore tracked down through indicators of performance (the meaning and scope of the indicators of performance is explained in the next section). However, unexpected effects and unforeseen results - that obviously are not previously described as indicators - are not easily represented in the model. This limitation of the Log. Frame. has been studied by researchers such as Des Gasper (2000) who proposes the need to incorporate unexpected variables of the sequence of the process into the system of evaluation. Due to the lack of coordination for unexpected variables, the Logical Framework is known as a convergent model, that is to say, a model that emphasises planned and desired objectives.

Obviously, this approach is not good enough if the evaluation requires considering unexpected effects of both internal decision-making and the influence of the environment (which is certainly the case when evaluating reconstruction projects). A different model is used to cope with this kind of situation: the divergent model. According to Brinkerhoff and Tuthill (1987), in the divergent model – also known as "evaluation without objectives" – the causes (or outputs) are tracked down to relate them with non-preconceived effects. Very often the evaluator using the convergent model starts by identifying causes that he/she can relate to expected effects, whereas in the divergent model, the evaluator sometimes requires to identify the effects (unexpected ones) and then relate them to a series of causes he/she will need to identify.

Fig. 2.5 represents the convergent and divergent models, the first one about the

evaluation of expected effects and the second one about the evaluation of unexpected effects. Brinkerhoff and Tuthill (1987), argue that evaluation methods should ideally consider both a convergent and a divergent model simultaneously.

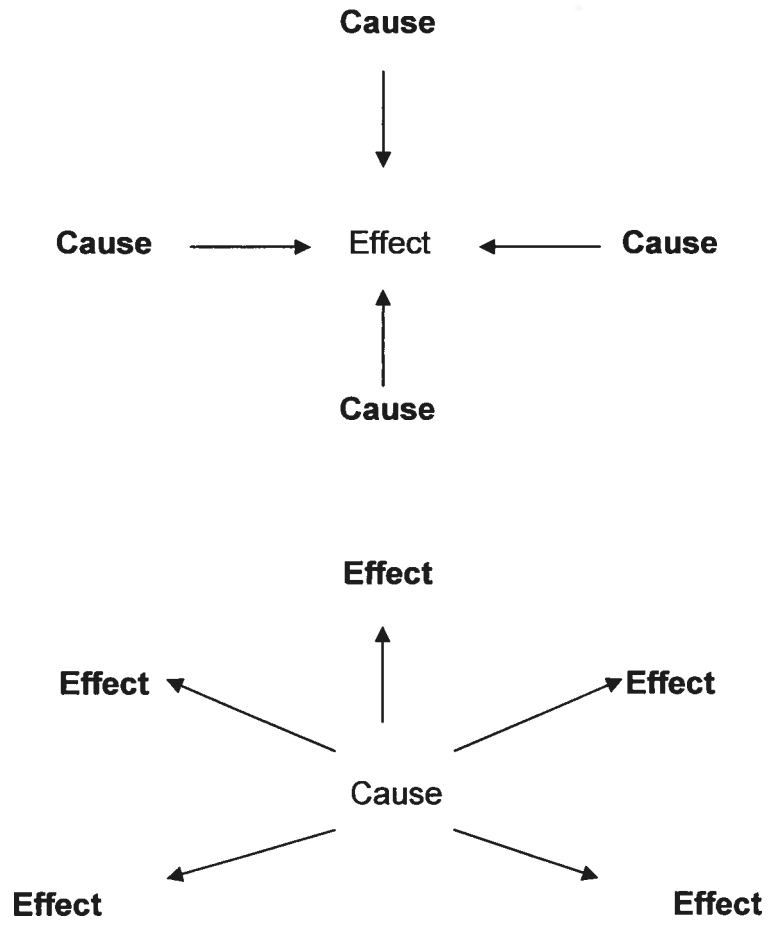


Fig. 2.5 According to Brinkerhoff and Tuthill (1987) the convergent and divergent models (the convergent model on top and the divergent on the bottom of the figure)

The divergent approach is commonly neglected or omitted in the Logical Framework Analysis. However, due to the importance of unexpected outputs in the performance of the project (certainly representing a crucial variable for the hypothesis of this study) a different layer will be added to the Logical Framework to give space to them. Finally, it is important to remember that those unexpected

effects (results) can be both positive and negative.

2.2.3. The model of evaluation

The model of evaluation proposed here (Fig. 2.6) is based on the Logical Framework proposed by Aubry and Hivon (1994). However, some changes have been proposed. As suggested here, the process of the project (ranging from inputs to impacts) is subdivided in two main areas: the area of direct influence of the system, and the area in which the project is exposed to the general environment. The inputs and outputs are considered in the first area whereas the results and impacts are considered out of the scope of direct control of the system. This approach responds to the belief that once the outputs are offered to beneficiaries, the multi-organisation has little or no control over them. If changes are required (and this might be because the anticipated assumptions do not correspond to reality), the organisations can control and keep monitoring the performance of outputs and (i) produce changes in the outputs being offered, (ii) deliver new outputs or (iii) stop the delivery of certain of them. However, the multi-organisation cannot change the way people react to products and services in the second area and has very little scope for changing the environment favorably other than through the outputs offered (which, in principle, have an impact in the environment).

In order to incorporate the divergent approach, and register, in a clear manner, the effects of the project that cannot be forecast, two spaces have been incorporated: one for unexpected results and one for unexpected impacts.

In conclusion, the changes applied to the Log. Frame. (as proposed by Aubry and Hivon, 1994) have a powerful influence in the way projects are analysed, because they highlight fundamental facts for the analysis of reconstruction projects:

- That the system is exposed to external factors (proper of the environment). Those influencing factors might have positive or negative impacts (they can be risks or opportunities) and the only thing the multi-organisation can do towards them is to acknowledge the risks and be prepared for them, and take advantage of the opportunities.

- That the results and impacts are greatly affected by external factors over which the multi-organisation has little or no control.

- That the evaluator needs to be ready to register not only the expected results and impacts (as proposed by the assumptions made before the disaster) but also unexpected effects.

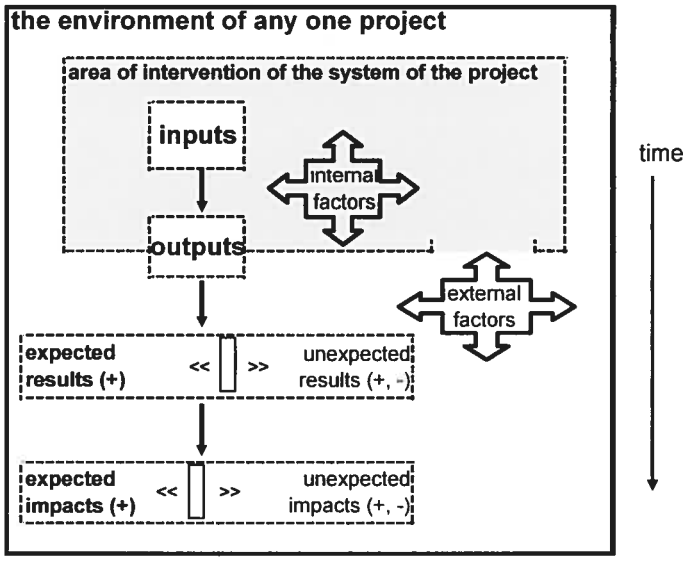


Fig. 2.6 Model of evaluation proposed here

Alternative versions of the Log. Frame. give a different meaning to inputs. Some of them relate the inputs to the raw resources used in the project while others relate the inputs to the activities developed in the use of those resources. To solve this, some organisations have used inputs in two different cells, identifying both resources and activities. As we will see in the definition of the indicators of performance, the model of evaluation proposed here does not include

resources, but emphasises activities instead; indeed in some cases, only the major characteristics of those activities.

This decision is based on the fact that in the evaluation of a project (seen as a process) we are deeply concerned with evaluating the performance in the development of *processes* and not evaluating the resources as such. In this type of evaluation, we are not interested in assessing the performance of –for example - bricks, but in the performance of the process of finding, selecting, transporting and assembling the bricks. In other words, in this model we do not evaluate the budget allocated to the project (a resource), but the capacity of the multi-organisation to obtain the required sources for the project (a characteristic of the activity of finding money). Obviously, this delicate distinction has a fundamental effect on the evaluation of projects if they are to be evaluated in terms of a logical sequence of activities and decision-making.

2.2.3.1. The indicators of performance

The stages of the Logical Framework that can be anticipated and that correspond to pre-established assumptions (inputs, outputs, expected results and expected impacts) need to be assessed in a way that reflects the fact that they represent the reality of the project at a certain level of completion. This assessment needs to be made in a consistent and replicable way. To accomplish this, the so-called indicators of performance are used. As defined by CIDA, "the indicator is a pointer. It can be a measurement, a number, a fact, an opinion, or a perception that points to a specific condition or situation over time" (CIDA, 1997). By selecting the indicators, the evaluator defines the type of information that has to be looked for and defines a position regarding the object or process under study. This bias should not make the evaluator feel ashamed. In fact, CIDA suggests that: "it is important to recognise before using indicators that all indicators have their own political heritage and bias" (p. 5). In fact, this bias has historically corresponded to the predominant approach towards

development and is better recognised than denied. For example, from the mid-1980s and during the nineties, the bias is reflected in the fact that there was a stronger focus on indicators of empowerment and participation (CIDA, 1997; Zaouali, 1994).

2.2.3.1.1. The problem of fine-tuning the indicators

According to CIDA (1997), indicators of performance need to meet two conditions: "reliability" and "validity". Validity means that the information that indicators provide must be close to the reality they are measuring. Reliability means that the indicators used must be accurate and consistent. These two conditions imply that (i) the indicator must reflect similar findings in different situations; (ii) that different instruments of measure must yield a similar assessment and (iii) that multiple uses of the same instrument yield similar results.

To meet the aforementioned criteria, the evaluation method requires breaking down the project into entities that can be measured in a consistent way. However, too broad indicators representing large subsystems of the project are difficult to measure. Let us illustrate this with a simple example. If a building is to be evaluated (the building as a product is a system) it can be subdivided in subsystems such as the system of vertical and horizontal circulations, the system of walls and partitions, the system of structure, etc. However, assessing each one of these sub-systems in a single indicator is not possible for that indicator cannot be measured in a replicable way (the "appropriateness" of vertical circulations can be assessed in different ways by different evaluators). This very fact implies that each of the subsystems needs to be broken down into entities for which there are indicators that meet the three criteria mentioned earlier. The subsystem of vertical circulations can be assessed by identifying, for example, the time that users need to wait for elevators (measured in seconds), the time it takes users to move form point A to point B (measured in minutes),

the capacity of elevators (measured in Kg), etc. The three examples that we present here can be assessed by different evaluators with different instruments obtaining similar or identical results.

However, the evaluator has to be careful of not fragmenting the subsystems too much, for it can lead to a false appreciation of the overall performance of the system. It is important to remember that the good performance of a system is not necessarily the accumulation of the good performances of its components (an inefficient wall can be made of wood panels, paint, nails and glue of very high quality). In the building performance field, this aspect has been seriously considered by Ezra Ehrenkrantz (1998) while studying the Schools Construction Systems Development in California, where "all of the sets of different building components [...] had to work together to provide total building acoustical performance".

It is therefore crucial to fine-tune the subdivision of indicators without incurring over fragmentation of the system. Also, the relations between components have to be enunciated and measured to assess a certain level of compatibility between them.

2.2.3.1.2. The problem of assigning a value to the indicators

Once the indicators are selected, one of the typical difficulties of evaluation is to give a certain value to a given level of performance. Let us exemplify this with the case of building performance. Let us consider the example of measuring the performance of a meeting room in a certain building. If one of the indicators is the capacity of the room and it corresponds to 25 people what does it mean? Is that appropriate? Is that too much or insufficient? In order to solve this, the American Society for Testing and Materials has developed an evaluation system consisting in a two-step process for assessing both building functionality and serviceability (ASTM, 2000). These two steps are assessed through the

judicious completion of questionnaires among officers responsible for the facilities and users.

In a first step, the ASTM's evaluation method assesses the functionality, i.e. the requirement scale (what is demanded, required or desirable). This demand is identified through a series of five statements numbered in odd numbers from nine to one (9,7,5,3, 1), determining in this way a scale in which nine corresponds to the highest performance. If the degree of performance required corresponds to an intermediate level in between the statements listed, it is marked with even numbers (8, 6, 4 or 2). In this step, the level of importance of that aspect is also assessed (it can be marked as being exceptionally important, important or of minor importance) and the minimum threshold level is indicated to identify the lowest level that is tolerated.

In a second step, the evaluation ranks the facility level, i.e. the serviceability (what exists or what is provided). At this stage, also five statements are suggested and the one that most closely relates to the reality is flagged. The five statements are also numbered in odd numbers from nine to one leaving the even numbers as intermediate ranks.

Consequently, both scales marked from nine to one are illustrated in a graphic (see Fig. 2.7). A parallel comparison of the two scales permits comparing their values in order to flag possible shortfalls or surpluses. That is to say, if the level of performance that is provided is higher in comparison to what is needed (or wanted) or if, on the contrary, the level of performance provided is lower than what is demanded. Both a shortfall and a surplus might be considered negative and are indicated in a third graphic with a color code (i.e. red for shortfall and blue for surplus).

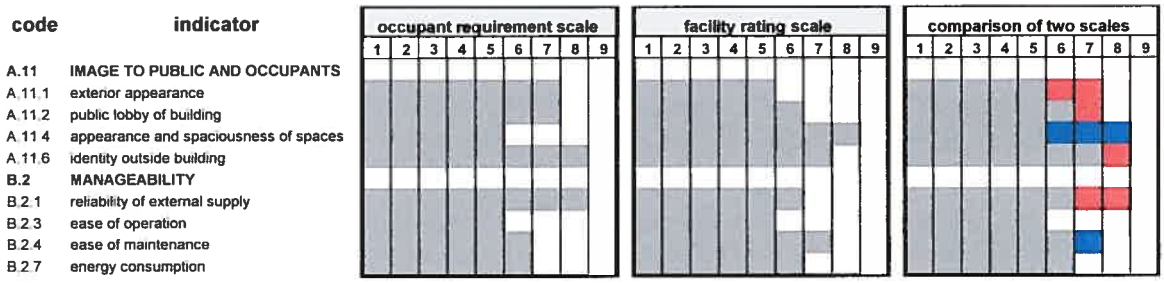


Fig. 2.7 Representation of the ASTM's method of evaluation (Adapted from ASTM, 2000).

Coming back to the simple example of the meeting room, a type of evaluation such as the one used by the ASTM solves the problem of knowing if a capacity of 25 people is 'good' or not. This type of evaluation would simply let us know whether that capacity corresponds to what is required and expected or not.

The ASTM two-step process is a smart solution that can be applied to the case of process evaluation, in which a similar difficulty is found. Which level, in an indicator of performance of an output, can be considered insufficient? enough? or acceptable? If a Logical Framework Analysis is used, how much of an output is 'good'? Let us consider for example the case of 500 houses delivered. Can we consider 500 houses built and provided as positive and adequate? As an analogy to the ASTM process it can be said that an indicator of performance of outputs (houses built) needs to be accompanied by an indicator of demand (were houses required?). This second scale corresponds precisely to what is going to be called here "the pre-project level of need (vulnerability and damage)".

2.2.3.1.3. Selecting the indicators of performance

A careful selection of indicators was necessary in the development of the evaluation method. This selection was based on the review of case studies in the literature, the review of similar studies of evaluation and the preliminary review of our own case studies. Even though a great number of indicators of performance were considered, only those matching the following nine characteristics were retained:

1. Each indicator must be a representation of: one aspect of the housing reconstruction project; or one aspect closely related with the performance of the housing reconstruction project. This seeks to reduce the number of indicators of the performance of:

- The reconstruction program at large;
- Aspects of the project not related with housing reconstruction (i.e. the indicators of the projects of emergency or medical assistance);
- Individual participants
- The final product

2. The indicators must appear frequently in the study of reconstruction projects or they must be frequently considered as variables of performance in the study of similar projects.

3. The indicator must be measurable by the researcher preferably using available methods for collecting first-hand data within the scope and limitations of the study. If a proper quantification to measure the indicator cannot be assessed by the researcher, the indicator must be able to be assessed by the observation, in place, of its most evident characteristics. In this case, a qualitative value based on observation must be used.

4. Preference is given to indicators which reflect major effects in the performance of the project by the fact of being included in the project or not. This characteristic makes it easier to measure the indicator (considering the scope of the study) and limits the amount of subjective value attributed to non-quantifiable indicators. The indicators of outputs must be products and services with major influences on the project, as shown by the simple fact of being or not included in the project.

For example, *roads* (the indicator of including or not including the construction of roads for transportation) or *health centres* (the indicator of building or not building health centres) are preferred over broader indicators such as *transportation systems available* or *health coverage*. Even though *transportation systems available* and *health coverage* are closer representations of the reality of transportation possibilities and health assistance, they are difficult to measure and they include aspects not related with housing reconstruction activities. Whereas the most important effects of the indicator *roads* are easily assessed by knowing if roads were or were not included in the project, measuring the availability of *transportation systems* requires one to analyse variables of commuting by bus, train, airplane, boats, etc (not necessarily directly related with reconstruction). Similarly, measuring the indicator of *health centres built* provides an idea of how the health condition of the community was addressed from the reconstruction point of view without entering into specialised evaluations of health management that, in any case, are impossible to measure within the scope of the present study.

This characteristic of the indicators of performance means that a certain level of simplification and generalisation is accepted. One could argue, for example, that not having included health centres in the project might not necessarily be related with low performance if an efficient system of visiting doctors exists in place. Even if this might be true, simplified and quantifiable indicators are preferred and, if necessary, a brief explanation to put them "in context" is included.

5. Indicators that are useful to support the hypothesis are preferred, in particular those that permit one to relate the relationship between the organisational design, the environment and the performance of the project.

6. Only indicators measuring an average level of development are included. This level corresponds to the level of development that is expected in the context of the projects that are evaluated. For example, even though including connection to Internet and television might be considered as an indicator of performance of housing reconstruction in developed countries, it is not included as a relevant variable in low cost housing in developing countries. This selection has been made after assessing the traditional level of development of low-income affected communities in the selected case studies.

Note that – even if it seems in contradiction with the previous argument - some level of performance is expected even if it is not common in the average level of development of countries in South and Central America. For example, this study measures the level of performance of transferring insurance policies to the private sector. Even though getting private insurance for housing is anything but common in low-income housing in developing countries, including it as a variable of performance denotes the position and opinion of the evaluator regarding the way in which developing countries could deal with risks of damages and destruction.

7. Only Critical Success Factors (CSFs) are retained. Adapting Leidecker and Bruno's (1986) approach to evaluation of business performance, a selection of indicators is made here according to the specific industry that is being evaluated. According to that approach, CSFs correspond to "things that must go right" in reconstruction projects in developing countries, leaving behind other aspects that, though they might be beneficial (pluses) are not critical for the project (musts)

8. The indicators of performance do not represent what is individually best for the community or what is best for the government or for the organisation responsible. According to Roberts (1972), performance is the level of utilisation of resources which results in the maximum benefits to all participants, not considered separately, without resorting to exploitation. Following that definition, the indicators show the level of performance for the multi-organisation involved in the project (including the beneficiaries) thus representing what is 'best' for the reconstruction project.

9. Following Aubert's approach to the Logical Framework (1994), the indicators of performance for inputs and outputs are selected as operational indicators. For the case of inputs they represent the completion of an operation or its main characteristics. In the case of outputs they represent the delivering of a product or service. For the results, only indicators of transfer are selected, including: transfer of knowledge, transfer of technology, acquiring a product, participating in the development of a product or service or using a service. For impacts, only indicators of development are used, according to the exclusive objectives of a reconstruction project. Even though the level of development must be increased, according to the definition of reconstruction, indicators of impacts exclude objectives of development not related with reconstruction activities.

2.2.3.1.4. Assessing the indicators of performance

The indicators of performance include considering both quantitative and qualitative information. In fact, a general consensus now exists in evaluation research about the advantages of combining both quantitative and qualitative methods (Cook and Reichardt, 1983; CIDA, 1997). Qualitative analysis is particularly useful to put the indicators in context. As it was exemplified earlier, a single indicator of, for example, 500 houses built does not mean anything from the process point of view if it is not put in context. In other words, is 500 houses

built good or not? It might be good if, for example, 500 houses were expected to be built, it might be bad if the average amount of houses built with the same resources is 2000 units. A qualitative assessment of the facts based on an expert's appreciation of the relations between the indicator and the context is fundamental.

It is well known that qualitative data provides depth and detail (Patton, 1980). According to Patton it consists of detailed descriptions of situations, events, people, interactions and observed behaviours (p. 22). In the type of evaluation proposed here, qualitative analysis is not being used to perceive levels of satisfaction of the participants of the project. Contrary to the gender-sensitive analysis made by CIDA (1997), in this study the interviews, meetings and informal conversations with the participants (including the beneficiaries) are not used to assess the level of satisfaction but to collect information about facts and situations that permit putting the raw data in context.

Let us emphasise this aspect. With the popularity gained for the participatory approach to development, users' satisfaction has been considered as a primary yardstick for the evaluation of international development projects. We do not pretend to underestimate the importance of it in the evaluation of performance. However, the method developed here assesses the performance of the process in terms of a consistent sequence of activities and decisions. Its primary objective is not to measure the opinion of participants but the capacity of those participants to conduct a consistent sequence of decision-making activities within the constraints of the context and to examine the effects of those decisions in the chain of activities. In other words, a project is not considered here as having adequate performance if users are "happy" but if the sequence and pertinence of decision-making responded to the risks and constraints of the hostile environment to consistently respond to the objectives targeted in the project.

The qualitative assessment of the indicators needs, therefore, to consider the aspects that, as discussed earlier, represent the development of the process. The questions related with the water-cups example (section 2.2.1) are used here in combination with the Logical Framework Analysis. In this way, the evaluator assesses the corresponding indicator by answering some of the questions (in the form of statements) formulated earlier as part of the example of the cups. Therefore, the evaluator might assess, for example:

Were the local and external resources optimised?
Was the targeted output attained?
Were the outputs available at the "right time"?
Is the product adequate for the environment in which it is going to be used?
Were the outputs available to the right people?
Did the local community use the outputs/ services offered?
Do the outputs offered correspond to the needs of the population?
Was a significant part or all of the real needs covered? Is that percentage satisfactory?
Did the project reduce the vulnerabilities of the population?
How did the environment affect the results of the project?

2.2.3.2. The Forms of Indicators of Performance (FIPs)

To assess the questions presented earlier, and some others that are specific for certain indicators, a series of forms have been prepared. The Forms of Indicators of Performance (FIPs) are completed by the evaluator through a series of statements that the evaluator assesses (all the FIPs are included in the attached CD). A FIP exists for each of the indicators and it consists of a series of statements that define the level of performance of the specific indicator. Fig. 2.8 shows the main components of the FIPs. As it will be explained later, the FIPs give a value to each of the indicators of performance. These indicators are summarised in a Table of Indicators of Performance and vulnerability (TIP).

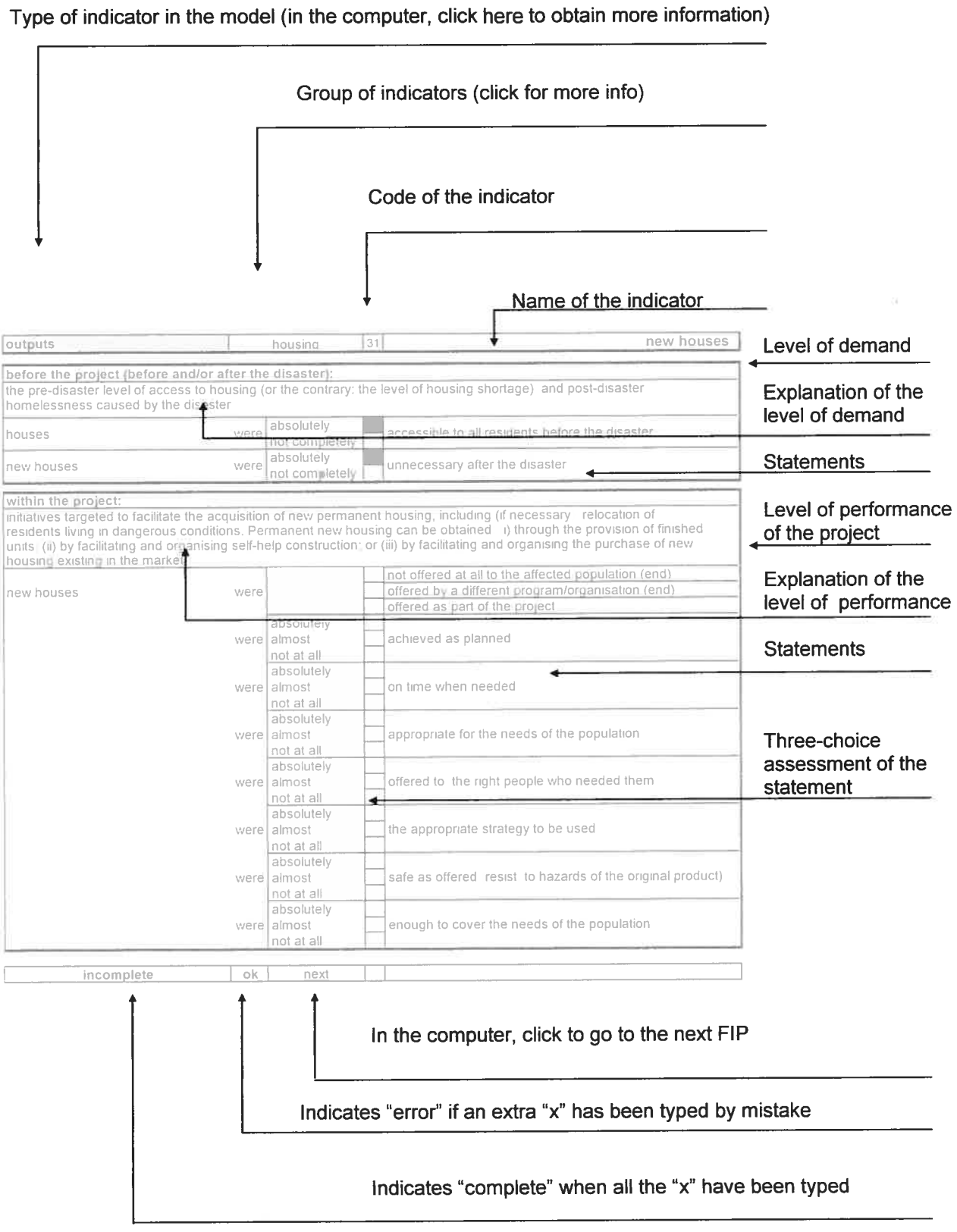


Fig. 2.8 Typical FIP

The statements are presented in a three-choice scale that indicates the level of conformity of that specific item to a certain degree of performance that is considered 'optimum' or 'desirable' by the evaluator. For instance, while measuring the performance of the capacity of residents to work in construction (an input measured in terms of the characteristics of the activity as a resource for the project) the compliance with the following statement is assessed:

Beneficiaries of the project had [sufficient] [relative] [insufficient] knowledge about construction practices.

This statement means that the fact that beneficiaries of the project had sufficient knowledge about construction practices is an 'optimum' or 'desirable' condition for the capacity of residents to work in construction. The role of the evaluator is to select among the three options the one that closely describes the reality of the project by typing an "x" in the corresponding space.

In all cases, the evaluator chooses among three levels. The first one being an absolute compliance with the desired level and the third one being a total discordance with that statement. For intermediate degrees of compliance only one (the second) statement is presented. The first level is defined by adjectives such as [absolutely], [sufficient], [very much] etc. The second level is defined by adjectives such as: [almost], [relative], etc. Finally, the third level is defined by adjectives such as: [not at all], [insufficient], etc.

This three-choice evaluation is based in a very pragmatic requirement that tries to reduce the level of subjective value of the evaluator to its minimum. With objective data the evaluator easily knows if the statement is absolutely or not at all compliant with the statement proposed. However, a more than three-option evaluation allows the evaluator to hesitate among 2 intermediate levels. This hesitation might be influenced by the character of the evaluator, which means that two evaluators might classify the statement in two different ways (one in the

closer level to complete compliance and another one in the subsequent level). This depends on the level or strictness with which the evaluator expects a certain level of performance of the project. Similarly, a more than three-option assessment may induce evaluators to consider the level of compliance differently according to their mood, e.g. being stricter at one moment or less strict at another.

The number of statements to be assessed varies for each indicator; however, in general, an average of five statements are enough to fully describe the indicator. Considering that similar methods of evaluation have not been developed for reconstruction projects, the statements have been selected by using: (i) the information that is commonly used in the analysis of post-disaster projects and (ii) the ten questions of evaluation drawn from the coffee-cups example presented earlier.

The FIPs of indicators of outputs include a special feature, responding to the fact that, as was previously explained, the performance of an output depends of the level of need of that particular aspect. This means that providing a product or a service is only desirable if that product or service is, in fact, needed. In other words, the provision of an output that is not required is undesirable if the resources spent in that output could have been used for developing products and services that are indeed required. Similarly, not providing an output that is not required is considered a wise decision while not providing an output that is required reduces the performance of the project. It is for this reason that the indicators of performance of outputs are compared against a determined level of demand of that particular product or service.

Similarly to the way the ASTM's evaluation compares the level of required functionality with the accomplished level of serviceability, the FIPs for outputs balance the performance of the product or service delivered with the demand or not for that particular output.

To do this, the evaluation is conducted at two levels: the first one in which the pre-project level of requirement is assessed and the second one in which the level of performance of the delivered output is assessed. It is important to note here that the pre-project level of requirement might correspond to (i) a pre-disaster level of demand (which corresponds to the pre-disaster vulnerability of the community towards that aspect) and/or (ii) a post-disaster (still pre-project) level of demand, in which case it includes the level of destruction and damages caused by the disaster.

The first part determines if the output was accessible to residents, if it was enough to respond to residents' needs, if it was safe enough, functional enough, appropriate enough for residents' needs, etc. Contrary to the statements of performance (assessed in a three-option scale), these pre-project statements are assessed in a two-option evaluation. The consequence of this is that the evaluator is confronted with determining whether the output was or was not required, clearly this is a binary choice where intermediate levels carry little importance. For example, if loans are needed because people do not have access to them, it does not make sense to ask whether they are 'very' needed of 'not that much' needed; as long as they are needed, a response from the project is required.

The statements used to assess the pre-project level of need describe the level of access to that resource that is normally expected in the context of the projects being studied. Similarly to the statements of performance, the statements of pre-project level of need have been selected through the review in the literature of the main aspects of vulnerability that are commonly considered. Following the definition of vulnerability used in this study, the level of access to each resource is particularly assessed in the statements.

Choosing the first option of the binary system means that the statement totally

describes the reality of the project under evaluation. Adjectives such as [absolutely] and [totally] are used. On the contrary, choosing the second option (through adjectives such as [not at all] and [not completely]) means that the statement does not represent the reality of the project.

Whatever the combination of statements that the evaluator chooses, the final result would be to determine if the output is or is not required. This means that determining a vulnerability in only one of the statements implies that the output IS required. If all of the statements of the first section are classified as totally compliant with the statement (the first option) the output is considered not to be required (see Fig. 2.8).

2.2.3.2.1. Quantifying the results of the FIP

Assigning a quantitative value to each of the indicators of performance does not permit a better understanding of the performance of the project. A number does not per se give more information about the reality that is being described by the statements of the FIP. However, it does permit an easy identification of the weaknesses and strengths of the project and - more importantly - it permits one to easily compare the level of performance of the same indicator in two or more projects. This is the reason for which a system of quantification has been developed for the indicators of performance.

The system consists in giving a quantitative value to the level of performance of the indicator, and – in the case of outputs – to the level of pre-project need. It assigns a value to each of the statements of the FIP and presents a global value for the indicator. The performance of the indicator of the project is quantified from 0 to 18 points (a number that was selected and was accepted after proving comfortable for calculations), 18 for the maximum level of performance and 0 for the minimum one.

The maximum 18 points are thus distributed among the statements that are being considered in each form. The maximum value of 18 points could be distributed with differential percentages for each of the statements, giving some of them more value or "weight" than to others. However, during the development of the method, different weighting possibilities were considered without obtaining systematic criteria for all of the FIPs. Because of the different perceptions about the priorities of the aspects of a project, it would not be possible to agree, with a group of evaluators, on a homogeneous distribution of weights applicable to all the FIPs. The extensive discussions around this subject concluded that the 'best' option - considering the scope of this study - was to give identical weights to all the statements of a FIP. Nevertheless, it was also agreed that more work is still required on this aspect to identify a scale of priorities that might help develop a systematic distribution of weights among the statements being considered. However, this aspect has been left for future research.

It is for this reason that the maximum of 18 points was equally distributed to value the first scale of the statements used. That means that if an indicator of performance of the project is assessed through six statements, the best mark obtained for each statement (in the first option) is three points. Conversely, if the indicator is assessed by only three statements, the first option of each statement will be marked with 6 points. In the case of the three-option statements, the intermediate option of the scale obtains 40% of the points attributed to the first option and 0 points for the third option (i.e. 6 points for the first option, 2,4 points for the second option and 0 points for the third option). The reason for 40% being assigned to the intermediate option is explained below. In the case of assessing the level of demand, where the binary choice is applied to the "pre-project" statements, the 18 points are distributed among the number of statements for the first option and zero is assigned to the second option.

Let us see an example:

The FIP for "new houses" that was presented in Fig. 2.8 consists of two statements for the level of demand (before the project) and seven statements for the level of performance (within the project). Additional information is also given to define if the output was -or was not- offered within the project. However, this additional information (also a three-option choice) does not carry any quantitative value. The 18 points attributed to the pre-project level of need are therefore distributed in 9 points for the statement "houses were [absolutely] accessible to residents before the disaster", and 9 points for "houses were [absolutely] unnecessary after the disaster". For the second option in the binary system (represented by [not completely]) 0 points are assigned.

The 18 points attributed to the level of "performance within the project" are distributed among the seven statements. The first option of each statement [absolutely] receives 2,6 points; the second option of each statement [almost] receives approx. 1,0 points, equivalent to 40% of 2,6; and the third option of each statement [not at all] receives 0 points.

For all of the three-choice scales of the FIPs, the second option has been deliberately assigned with forty percent of the maximum value assigned to the statement. Instead of fifty percent, which some could say: "represents the middle-in-the-way value between maximum and minimum performances." This decision responds to two requirements of the evaluation method:

1. The need to increase the gap between highly proficient projects and projects with mediocre performances. This reduces the possibility that the final results are all too similar to determine significant differences in between the projects. Metaphorically, it prevents the comparison of the projects from having "insignificant differences in a scale of gray tones" which would make it very difficult for the reader to distinguish. Before evaluating the projects, the value of forty percent was tested and proved valuable to reduce that risk.

2. To "punish" more severely projects that did not follow the expected results. The definition of forty instead of fifty percent is a statement of severity that implies that "almost" doing something is closer to an undesirable performance than to a desirable performance.

Once the level of demand and the level of performance within the project are quantified, the final mark for the indicator consists of the addition of the two values. This addition represents two possibilities:

1. If the output is required, the level of demand receives 0 points and therefore the level of performance will be established in between 0 and 18 points resulting from the statements of the second section (within the project).

2. If the output is not required, the level of demand receives 18 points and therefore the level of performance of the indicator can have two values:

- 18 points if the output was not provided as part of the project, in which case the level of "performance within the project" is zero.
- A value between 18 and 36 points if the output was provided as part of the project, in which case the level of "performance within the project" ranges from zero to 18 points.

Let us see, as a matter of example, three possibilities: (1) if "new houses" were required and the performance of the output (within the project) receives a value of 16 points, the final value would be 16 points; (2) if "new houses" were not required and "new houses" as an output were not provided the final value of the indicator will be 18 points; (3) if "new houses" were not required and "new houses" were provided as part of the project then the final value will exceed18 points.

In conclusion, the system of adding up the values obtained from the level of

demand and the level of performance within the project means that the ideal performance for any of the indicators is 18 points. More than 18 points is considered "undesirable" as it means putting an effort in an output that was not required. In other words, this evaluation system allows one to:

a. prevent projects from being "punished" for not developing an output that was not needed anyhow (in which case the final value is 18 points);

b. "punish" projects that did not do anything or did not do enough for an output that was required (in which case the final value is zero or close to zero);

c. "punish" projects that developed an output that was not required, assuming that other aspects surely required the attention of the project (in which case the final value is between 18 and 36 points).

2.2.3.3. The Table of Indicators of Performance TIP

As was explained in the previous sections, the selection of the indicators of performance is one of the most important aspects of the evaluation process. As previously discussed, the evaluator decides what are the indicators that reflect a vision of the project that is adapted to the kind of information that is required. However, selecting different indicators to evaluate different projects disturbs the results of the evaluation if the evaluation system (and its conclusions) refers to various projects in parallel. It is for this reason that a unique system of evaluation needs to be applied to the projects that are to be simultaneously studied (in this case, the selected case studies).

The method chosen here leads to a graphic representation and summary of the evaluation method described earlier, accompanied by a series of diagrams that highlight the relations between the organisational design of the project and its

performance (as suggested by the hypothesis of the study). This is a two-step process including: (i) developing the Table of Indicators of Performance (TIP) and (ii) representing the organisational design, where both refer to the reconstruction process being evaluated.

The TIP has been prepared as a tool to visualise a summary of the evaluation of the project quickly and effectively. The table was originally inspired by the "diagramme de congruence" employed by Brinckerhoff and Tuthill (1987) to illustrate the results of their evaluation based on the Logical Framework. The "diagramme de congruence" presents in a scale from 0% to 100% the level of completion of inputs, outputs, effects and inputs according to the original estimations. Thus, if education was to be provided to 1000 beneficiaries (estimation of output) and it was finally provided to 700 beneficiaries, the diagram would represent a 70% of performance in outputs. This diagram appeared initially suggestive as a tool to quickly visualise the results of the evaluation. However, the complexity of reconstruction projects demanded a more complete set of variables where, contrary to the diagrams presented by Brinckerhoff and Tuthill, many inputs, outputs, results and impacts needed to be considered together.

The tables of indicators used by the ASTM (2000) (see Fig. 2.7) to measure building functionality and serviceability were also inspiring for the design of the final TIP. In the ASTM's table, a series of indicators are considered without incurring the risk of adding up items of different natures. In other words, taking care not to be adding "apples and oranges" while giving an overall picture of the performance of the project.

The TIP presents, in a simplified and graphic manner, the most important aspects that have been evaluated in each project, allowing the reader to observe and compare - in a standardised form – the level of performance of the indicators that have been selected. The construction of a unique table of

evaluation permits a fair and unbiased parallel observation of two or more reconstruction projects at the same time.

The table was not prepared for a direct comparison of the final performance of different projects taken in isolation from their contexts. The reader must always remember that the overall performance of a reconstruction project is the result of the performance of its individual subsystems as a variable of the vulnerabilities of the affected community. However, the TIP easily shows the aspects where each of the projects had low or high levels of performance and the aspects that were delivered by an organisation that does not belong to the multi-organisation responsible of the project. Figure 2.9 explains the type of information that is provided by the TIP.

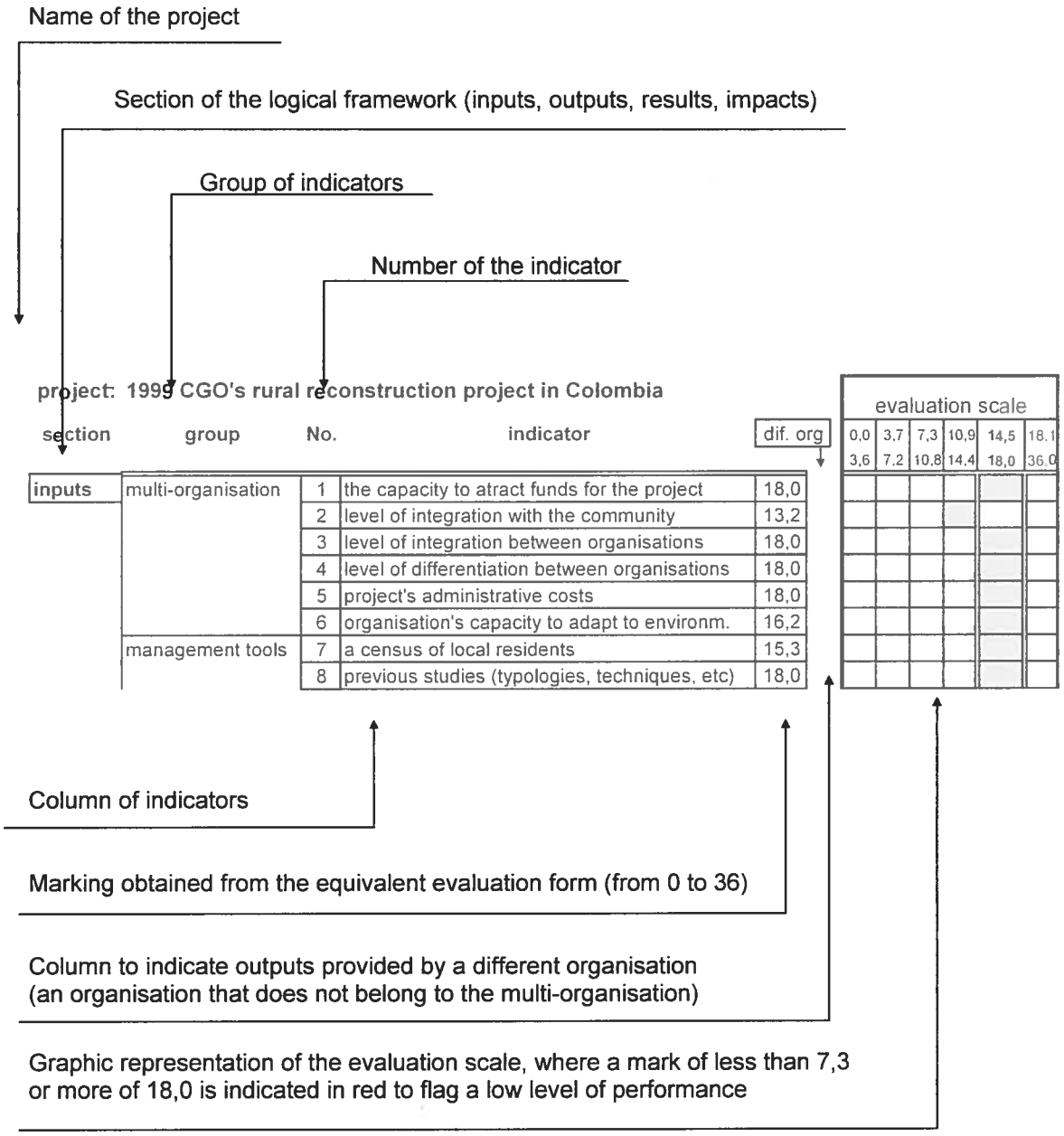


Fig. 2.9 The information provided by the TIP

2.2.3.4. Identifying and analysing unexpected results and impacts

Developing a systematic way of identifying the unexpected outcomes of a project is particularly difficult since, by nature, unexpected results and impacts are difficult to predict and - most likely - are different for every project.

However, the review of literature and other case studies in the field of reconstruction reveal that, even though an infinite number of unexpected outcomes might exist, there are a limited number of variables that cause the majority of them.

Unexpected outcomes appear when the outputs provided or developed by the project get in contact with the external environment of the system that produced them. In Fig. 2.6 this environment is represented by the larger box and the system and its immediate environment is represented by the grey box. Outputs are exposed to the external environment when they are transferred to end users, for example when housing units are provided to users, or when users acquire a product or a service (an output) provided by the project. When external factors (represented in Fig. 2.6 by the arrows in four directions) upset the expected sequence of outputs-results-impacts, unexpected outcomes become likely to appear.

What makes this new sequence particularly interesting, that is to say, the importance of including the unexpected outcomes, is that the muli-organisation in charge of the project has, very often, very little influence over the external factors. The area of direct influence of the organisations that develop the project is the 'system' (in other words, the project – including the inputs and the outputs) and the *immediate* environment of that system. Even though a fuzzy limit probably exists between the immediate and the larger environment, this argument about the impact of the larger environment on the outcomes of a project is easy to illustrate with the following example: A temporary multi-

organisation develops a project to provide a product that users have to pay for in monthly payments, using a foreign currency (for example US dollars). This mode of payment in foreign currency responds to the fact, for example, that the project was conducted with loans and financing responsibilities acquired in that foreign currency (US dollars). If end-users earn their income in a local currency (for example in Honduran Lempiras) and a sudden devaluation of the Lempiras in relation with the US dollars occurs when the product is transferred to the end-users, it might be possible that the economic feasibility of the project will be challenged. If the devaluation of the local currency affects the capacity of end-users to respond to their payment obligations, unexpected outcomes might occur (for example that users return the products or leave their homes or even refuse to pay the monthly instalments). In this example, it is clear that the organisations developing the project have little or no capacity to influence the external factor that affected the project (the exchange rates between Lempiras and US dollars). These organisations can – in the best of cases – influence an immediate environment of the system; for example to persuade the financial institutions to give them low penalty interest rates for delayed payments. Nonetheless, the major influence of these organisations is on the inputs and outputs of the project; for example, if they could anticipate a change in the exchange rates, they can modify the product to make it more affordable in the new economic conditions.

In the case explained earlier, an external factor disrupted the expected assumptions of the organisations - for example that users were going to acquire and use the products; as a result the performance of the project is affected.

Even though an infinite number of external factors potentially exists, they can be categorised in five groups as suggested previously. They are:

Social factors
Economic factors

Cultural factors
Political factors
Physical factors

These five categories of factors might disrupt the expected assumptions that relate:

1. Outputs to results and
2. Results to impacts

These impacts are now explained. First, let us recapitulate the assumptions concerning the project; then we can identify where the external factors can upset the best planned project.

1. Impact on the relationship of outputs to results:

By definition, the indicators of results are those that explain the relations between the outputs and the end-users (Aubry and Hivon, 1994). Two types of relations between end-users and outputs are often identified:

1. Results of transfer (Aubry and Hivon, 1994): end-users acquiring and using the outputs
2. Results of participation (Da Silva, 1984): end-users participating in the development of the outputs

Even though the assumptions might be different for every project, case studies prove that the most common assumptions in product oriented projects are:

For the results of transfer:

Assumption No. 1: if:

1. Users have access to the product (if the product is affordable, accessible, etc) and,
2. The users "like" it (if the product corresponds to the needs, desires and expectations of the users)

Then:

The output is acquired.

Assumption No. 2: if:

-The product is acquired and its use corresponds to the needs, desires and expectations of the users

Then:

The product is used.

For the participation of end-users, the following assumptions seem to be proposed very often in the field of housing provision:

Assumption No. 3: if:

1. End-users are shown that resources do not allow for paying the labour force,
2. End-users are taught how to participate in the activities of the project,
3. End-users have the time (or can manage to get the time) to participate in the project,
4. End-users are given the resources (tools and materials) to participate and
5. End-users are explained that the product is not given 'for free' but instead it can be 'paid for' by helping in its production

Then:

They will participate in producing the product

2. Impact on the relationship between results and impacts

Impacts usually correspond to the goals of the project. Therefore assumptions about the logical transfer between results and impacts are those that relate to:

The results of transfer to attaining the goal (s)
The results of end-user participation to attaining the goal (s)

That means that the following assumptions are commonly found:

Assumption No. 4: if:
People use the products (usually just acquiring the product is not enough)

Then
The goal is attained

Assumption No. 5: if:
People participate in producing the product

Then
The goal is attained

In reality the goals are often very similar. In recent cases of reconstruction projects they commonly include aspects related with long term development and reduction of vulnerabilities.

Assumptions 1 to 5 can be called "internal assumptions" since they correspond to the expected sequence of the internal process of the project. Sometimes these internal assumptions are complemented by 'external' ones that correspond to the type of environment that is expected for the proper development of the project.

Two types of external assumptions might exist:

Assumption No. 6: If:

No sudden and/or unexpected changes occur in the environment

Then

The expected results and expected impacts occur

Assumption No. 7: if:

A certain expected change occurs in the environment

Then

The expected results and expected impacts occur

An example of assumption 7 could be that the organisers of the project expect that interest rates will decrease over a certain period of time. If that external factor occurs (interest rates decrease) then the users are able to take loans to acquire the outputs.

This analysis shows that, in reality, projects are disturbed at the levels of results and impacts when external factors (grouped in the five categories mentioned above) influence the seven possible assumptions. Table 2.1 illustrates the possible combinations that may exist between the factors and the assumptions to help the evaluator identify the most frequent (and likely to be found) unexpected results and impacts.

Table 2.1 This matrix can help the evaluator identify the most frequent unexpected results and impacts

external factors / assumptions	social	economic	cultural	political	physical
Assumption 1					
Assumption 2					
Assumption 3					
Assumption 4					
Assumption 5					
Assumption 6					
Assumption 7					

Let us explain this with an example. Following the matrix, the evaluator can recognise that a cultural factor (for example the way in which the message used for advertising the outputs was received by the local community) can disturb the second assumption (people acquired the product, which corresponded to their needs, desires and expectations). A hypothetical result of this influence (corresponding to the node of the third column - cultural, and the second line – assumption) could be that people refused to use the product once it was acquired because they misunderstood the way it had to be used.

It is important to clarify that the purpose of the evaluation conducted here is not to identify cause-effect relationships of the unexpected outcomes. Even though some principles in that regard might be established with the information available, a complete scientific analysis of the cultural, economic, social, political and physical external factors is outside of the scope of the present work. The only cause-effect relationships that this study attempts to prove in a systematic way are those related with the four elements of the research hypothesis and the methods to analyse them are described in section 2.5.

2.3. Representing the organisational system of the project

A standard method of representation is suggested here to see in parallel the case studies. Analysing the structure of the project requires representing both the structure of the organisation responsible of the project and the structure of the multi-organisation. Even though the analysis of the internal structure of the organisation responsible of the project is not particularly useful for building up relations required for validating the hypothesis, it is used here to analyse the way the organisation responded to the challenge of the project. For this analysis, the method used by the Project Management Institute in the PMI Body of Knowledge (PMBOK) is particularly useful. In this approach, a series of models permit identifying the role of each of the subsystems of the organisation. Two main types of structures can be identified: the functional-based and the project-based organisation (PMI, 1996).

The functional organisation (Fig. 2.10) has a classical hierarchical structure where each employee has a clearly identified superior and the teams are grouped according to their specialisation. Each of the teams (subsystems) of the organisation is a functional independent unit that cooperates to the development of the project exclusively within the boundaries of their own functional specialisation. The transfer of information in this structure follows a hierarchical dimension in which the employee transmits the information (or the question) to his superior who communicates with the person responsible in the other unit.

At the opposite end of the spectrum is the projectized organisation (Fig. 2.11), in which team members are often located. Most of the organisation's resources are devoted to project development and project managers have a great deal of independence and authority. If sub-departments (or units) exist, they usually report to the project manager or provide service and support to the ongoing projects.

In between those two approaches, three intermediate structures exist: the weak matrix organisation (Fig. 2.12), the balanced matrix organisation (Fig. 2.13) and the strong matrix organisation (Fig. 2.14). They correspond to a blend of the functional and the projectized characteristics. Weak matrices maintain most of the characteristics of the functional organisations and the project manager acts more like a coordinator than like a manager. In a strong matrix organisation most of the characteristics of the projectized organisation are maintained.

As represented in figure 2.15, a combination of the previous structures might appear. In fact, modern organisations usually combine different structures. For example, a fundamentally functional organisation might prepare a project team for developing a critical project.

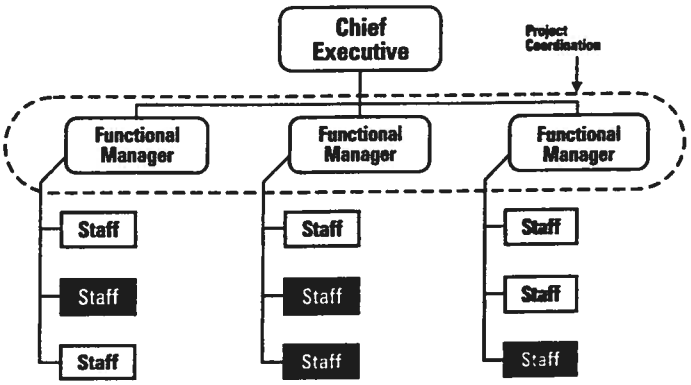


Fig. 2.10 Functional organisation according to the PMBOK (in all of the PMBOK diagrams black boxes represent staff engaged in project activities)

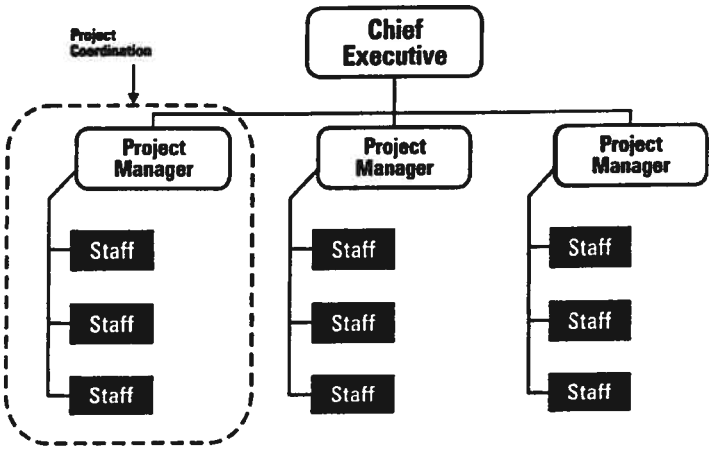


Fig. 2.11 Projectized organisation according to the PMBOK

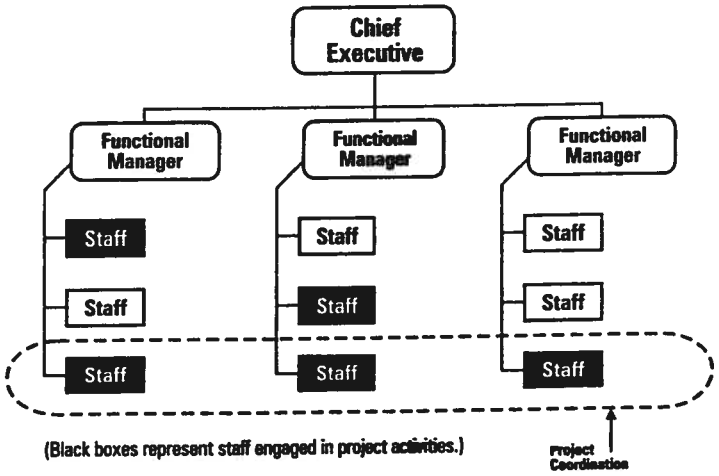


Fig. 2.12 Weak matrix organisation according to the PMBOK

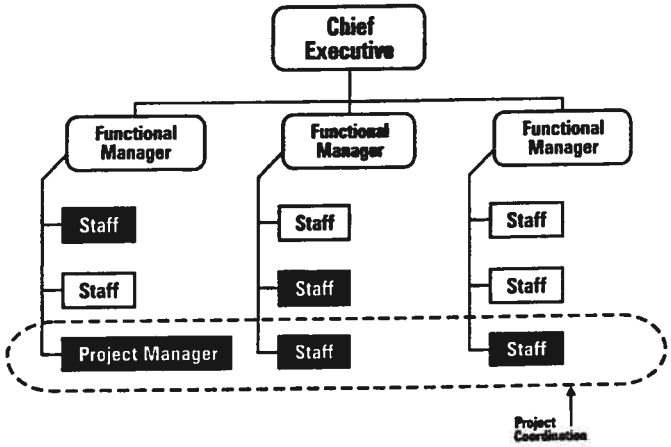


Fig. 2.13 Balanced matrix organisation according to the PMBOK

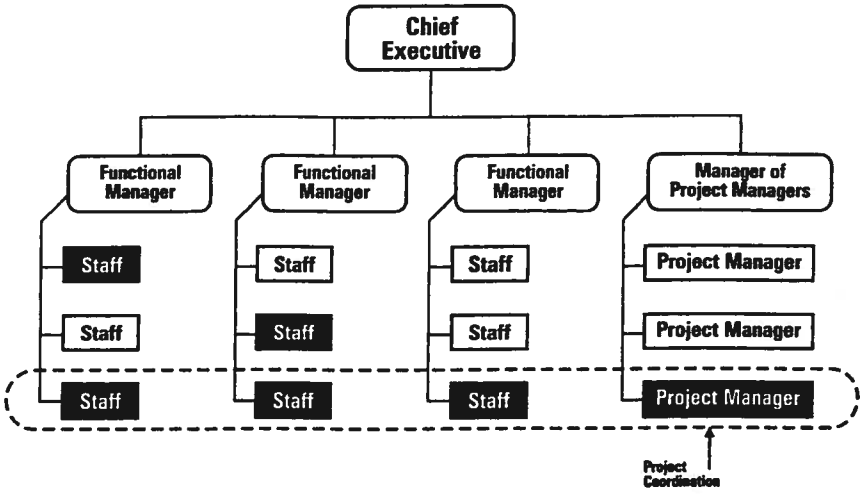


Fig. 2.14 Strong matrix organisation according to the PMBOK

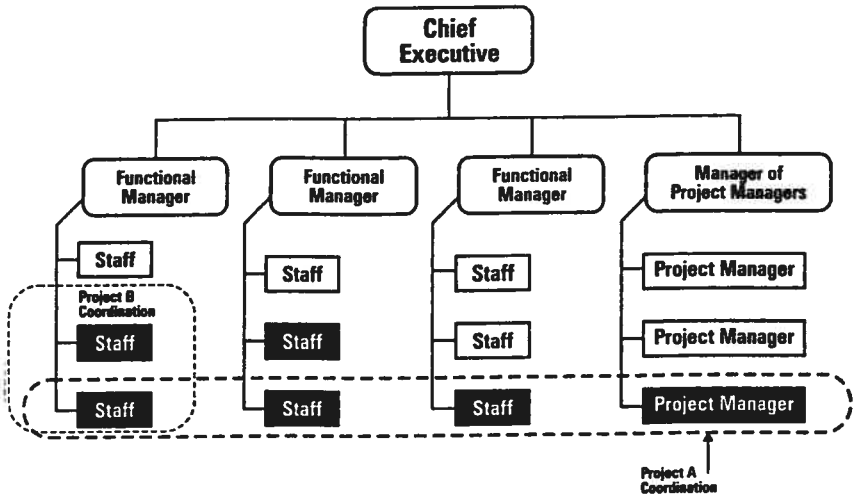


Fig. 2.15 Composite organisation according to the PMBOK

The structure of the multi-organisation is represented in a diagram inspired by the model of construction projects as proposed in section 2.2.1. It is important to remember that in this diagram, the project is considered as a system including multiple subsystems, all of them embedded in a larger environment. A project is then, the consequence of an organisation (or multi-organisation) that develops some processes to produce a product or service that is finally offered to, and acquired by, users (see fig 2.16)

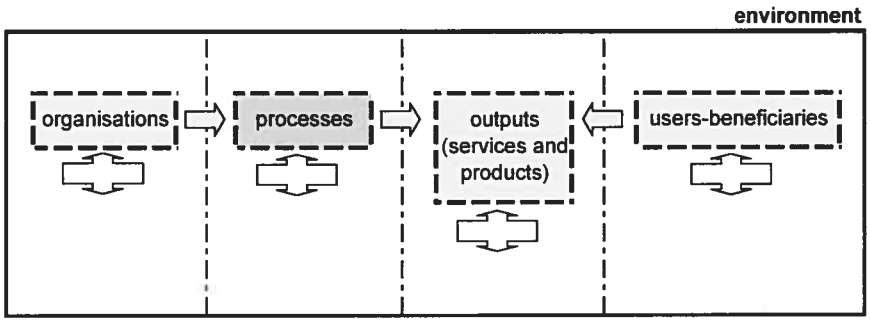


Fig. 2.16 Diagram of a construction project (same as in Fig. 2.2)

Accordingly, the diagram to represent the organisational system of the project (Fig. 2.17) illustrates the elements of the system and their relations. The organisations are linked by the main processes that relate them in the project, which correspond to the activities that are conducted to lead to the development of the outputs of the project (which are also subsystems). These outputs are directly linked to a targeted population that become the users or beneficiaries of this process.

The diagram distinguishes, among the most important participant organisations, those that are considered local and those which are external. Local organisations are closely related to the environment of the project (regional or national-based organisations) whereas the external organisations usually correspond to internationally based institutions or NGOs. Also the organisations that are not part of the multi-organisation responsible for the project, but that had an influence in the development of the processes are indicated (in clear white boxes). The relations between the organisations (links indicated by connectors) are as important in terms of the information they provide to understand the project as the non-existence of relations (which are obviously absent in the diagram). In other words, these diagrams are important both for what they show and also for what they do not show.

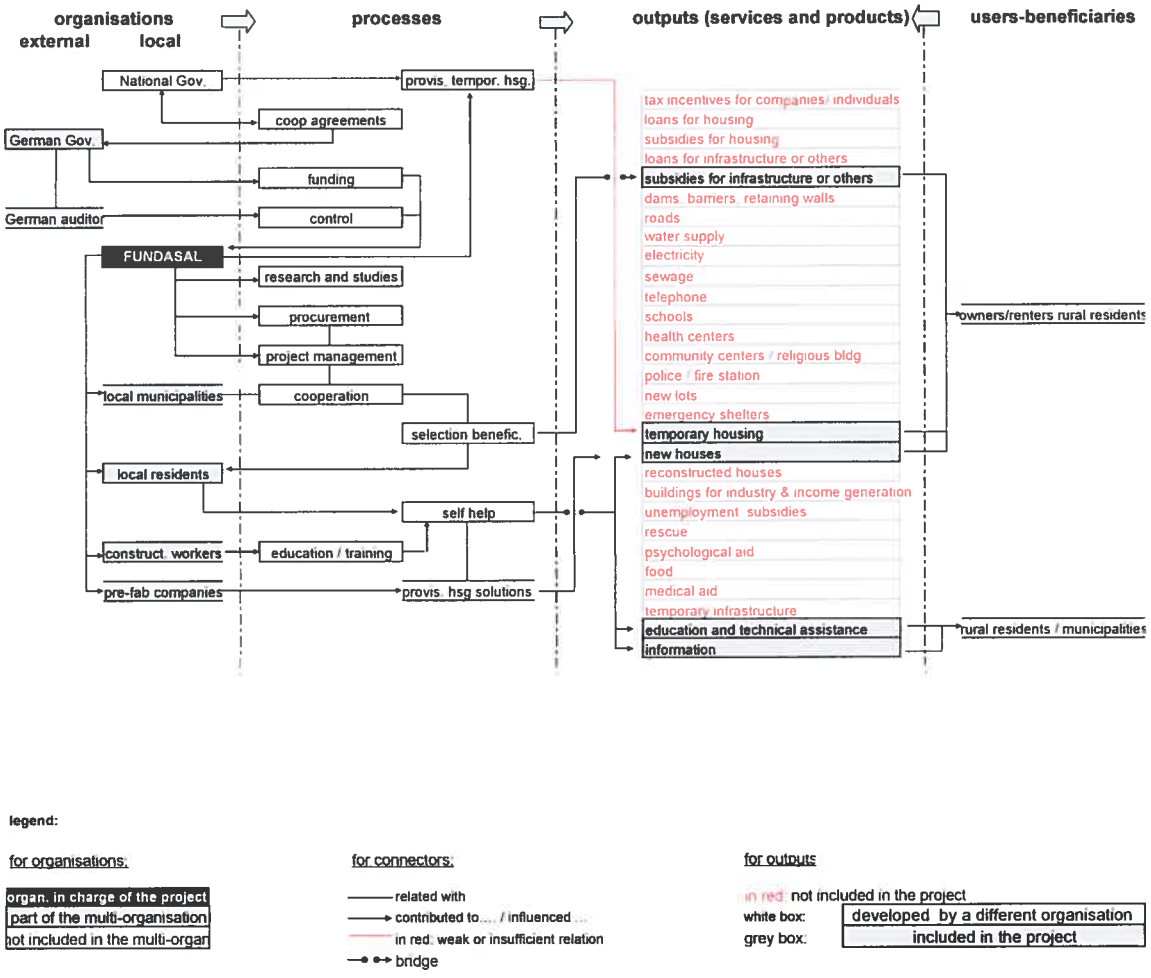


Fig. 2.17 Example of the diagram of the multi-organisation (in this example applied to FUNDASAL's reconstruction project)

The main processes (activities) conducted by these organisations are also represented. Of course, not all the activities involved in the project are shown, only the most important elements of a Work Breakdown Structure (WBS) for reconstruction projects are illustrated. According to the WBS of average reconstruction projects those activities are:

Cooperation agreements: The planning, definition and accomplishment of cooperation agreements in between two or more organisations to provide funding and/or technology transfer.

Funding: The activities conducted to partially or totally fund (through subsidies, loans, or donations) a project or an output that is being developed within a project.

Procurement: the activities conducted to assign responsibilities among a group of participants within a project. It usually corresponds to the activities developed by the client to hire employees and/or define contracts. Contracts and subcontracts assign the responsibilities for the tasks required for the development of the project.

Research & studies: the development of the activities targeted to gather information and knowledge about the affected community or its environment. It might include studies of soil, architectural typologies, weather, or sociological or anthropological studies.

Distribution of money: Activities leading to the transfer of funds from funding organisations to beneficiaries.

Selection of beneficiaries : the activities conducted to determine the beneficiaries (passive recipients or active participants) of the products and services offered by the project.

Project management: the activities of leadership in the multi-organisation targeted to plan and design the process, distribute responsibilities, assign tasks, control the operations, evaluate the process and, in general, all the activities of management of human resources, costs, quality, time and information and knowledge.

Control: activities targeted to follow up and modify the process according to certain objectives of performance.

Cooperation: coordination of two or more organisations to develop an output within the same objectives.

Provision of: land / housing solutions / temporary housing: the activities targeted to transfer an output (a lot, a house, etc) to the beneficiaries. It may include legalisation of property titles and all the activities required for the legal acquisition of it. Three main groups of outputs are indicated here: land, housing solutions and temporary housing.

Decision making: activity of selecting a product or service among a series of options offered.

Educating and training: activities targeted to the transfer of knowledge, skills and/or information.

Construction: construction activities conducted by hired personnel or contractors.

Self-help: activities of participation of the users in the process. As suggested by Roberts (1972), it might include one, some or all of the following activities: design, management, financing of the project, production of components, construction.

Construction: Leading the physical construction of a building or of some type of infrastructure. Activities related with hiring construction work (i.e. hired labor force).

The sequence of organisations and processes is followed by a summary of the main outputs (products and services) developed in the project. Those outputs correspond to the indicators of performance that were previously selected. The list of outputs has the same ordering and wording as the indicators of performance of the TIP; however, only some of the outputs are developed in each of the projects. As a warning signal, the outputs that are not included in the project, or those included but presenting a low level of performance are highlighted in red.

2.4. Collecting the information for the case studies

Table 2.2 illustrates the type of information that was gathered for each of the projects. By completing this table as a checklist the same type of information was obtained for the four case studies.

The interviews with the officers of the organisation responsible of the project were initially prepared in the form of a guided questionnaire (see annex 1). However, in all cases, the officers (project managers, directors and executives of the organisations) demonstrated a pre-established structure to present their projects (probably the same structure they use to present the project to their superiors). The structure used by them demonstrated that they were prepared and well organised and appeared to be useful to compile as much information as

possible. Therefore, the guide that was prepared for the interview was only used as a checklist to ensure that all the information that was required was obtained. Letting the officers talk freely permitted collecting information that was not originally expected while filling in the data that were expected. In the same way, the open interviews with residents (see annex 1) permitted obtaining unexpected insights about their view of the project. The information given by the officers and by local residents was triangulated with the official reports written by the organisations responsible and with other reports and information from the media.

In one of the projects selected as a case study (the project of the municipality of San Salvador - the criteria for selecting the case studies is presented in section 2.6), internal information in the form of letters, faxes, emails and partial reports proved valuable to overcome the lack of a final report. In the other projects, the final reports provided most of the data required for the evaluation. Considering the way in which the statements of the FIP are conceived, objective data from official reports was more valuable than subjective information coming from the interviews. In this way, once the objective information was collected, completing the FIPs proved to be a rather mechanistic process where subjective value was negligible. Due to the way in which the statements were deliberately conceived, the personal opinions obtained from stakeholders provided less information for evaluating the projects than verifiable data. As a matter of example, the following statements used in the FIPs illustrate that the type of information that was required corresponded more to verifiable objective information than to subjective opinions:

- Whether an output was delivered on time or not;
- Whether an output was or was not used by beneficiaries;
- Whether the money that was expected to be collected was collected or not;
- Whether users determined the layout of the spaces within their houses or not; etc.

Table 2.2 Information required for the case studies

No.	Type of information	Source	In the form of:	case study 1	case study 2	case study 3	case study 4
1	**The context**						
1,1	General context						
	Economic context	previous studies	documents and statistics	x	x	x	x
	Social context	previous studies	documents and statistics	x	x	x	x
	Political	previous studies	documents and papers	x	x	x	x
	Geographical	previous studies	maps and graphics	x	x	x	x
1,2	Preparedness measures (mitigation policies, protocols, implemented strategies)	previous studies	documents	x	x	x	x
1,3	The history of disasters	previous studies	articles and papers	x	x	x	x
1,4	Previous case studies	previous studies	articles and papers	x	x	x	x
2	**The disaster**						
2,1	Reports of the natural disaster	1st hand info	official reports, news papers	x	x	x	x
2,2	Analysis of the vulnerabilities	1st hand info	graphic model analysis	x	x	x	x
2,3	Report of the initial responses for rehab.	1st hand info	articles, official reports	x	x	x	x
2,4	Measures taken by the government (taxes, employment, legislation, etc.)	1st hand info	articles, official reports	x	x	x	x
3	**The case study**						
3,1	General approach	model analysis	interviews	x	x	x	x
3,2	Technological approach	1st hand info	plans and pictures	x	x	x	x
3,3	Reported results	previous studies	official reports and papers	x	x	x	x
3,4	Evaluation of results	1st hand info	statistics and interviews	x	x	x	x
3,5	Short term evaluation	model analysis	model analysis	x	x	x	x
3,5	Mid-term evaluation	model analysis	graphic analysis and discussion	x	x	x	x
	Questionnaires						
	Questionnaire to residents	1st hand info	visits to some residents	x	x	x	x
	Interviews with officers	1st hand info	guided questionnaires	x	x	x	x
	Specific 1st hand info. required						
	Pictures of the disaster			x	x	x	x
	Pictures of the reconstruction project			x	x	x	x
	Plans of pre-disaster housing typologies			x	x	x	x
	Plans of the reconstruction project			x	x	x	x
	Construction documents (budgets, schedules)			x	x	x	x
	Information from the organis. responsible:			x	x	x	x
	Organigram			x	x	x	x
	Mandate			x	x	x	x
	Procurement strategy			x	x	x	x
	Technological aspects			x	x	x	x
	Information and opinion from the media			x	x	x	x

2.5. Finding relations between the performance of the project and its organisational design

Once the projects are evaluated, and the organisational systems are clarified and represented, the relations in between them need to be established. To do so, it is important to remember that the hypothesis of the study proposes that the performance of the project is a dependent variable of four main variables:

First variable	The level of integration and differentiation within the multi-organisation, including inserting the project in a larger program of reconstruction
Second variable:	The multi-organisation's strategic capacity to attract funding
Third variable:	The multi-organisation's capacity to share and react to the risks of the environment
Fourth variable:	The level of user's responsibility for individual decision-making among a series of choices offered

The following cause-effect relationships need to be examined to validate each of the four aspects included in the hypothesis. For each relation a few micro-hypotheses are proposed. These micro-hypotheses are validated (true or false) based on the evaluation of the set of projects studied in this research.

2.5.1. First variable of the hypothesis

First variable	**The level of integration and differentiation within the multi-organisation, including inserting the project in a larger program of reconstruction**
Second variable:	The multi-organisation's strategic capacity to attract funding
Third variable:	The multi-organisation's capacity to share and react to the risks of the environment
Fourth variable:	The level of user's responsibility for individual decision-making among a series of choices offered

A. Possible relationships between the level of differentiation and integration (indicators of inputs No. 2, 3 and 4) and the overall performance of the project (including expected and unexpected results and impacts): **The micro-hypothesis is: higher levels of integration and differentiation lead to higher levels of performance.**

B. Possible relationships between the fact that the project was either independent or else coordinated with a larger program of reconstruction and the overall performance of the project (including expected and unexpected results and impacts): **The micro-hypothesis is: if the project is well integrated into a larger program of reconstruction the level of performance is higher.**

C. The relationship between the different organisations in the diagram of organisational design and the delivery of outputs. Particularly if an output is not delivered in the project and none of the organisations took care of it: **The micro-hypothesis is: the outputs that were not developed correspond to missing or insufficient links within the multi-organisation**.

D. The possible relationship between the amount of relations and organisations participating in the multi-organisation and the variety and quantity of outputs offered: **The micro-hypothesis is: more organisations participating and more relations in between them lead to higher levels of performance**.

E. The possible relationship between the amount of processes included in the project (processes listed in the WBS) and the overall performance of the project (including expected and unexpected results and impacts): **The micro-hypothesis is: the more processes included in the project the better the performance of the project**.

F. The possible relationship between the amount of organisations participating in the project and the amount of processes conducted: **The micro-hypothesis is: more organisations participating in the project lead to more processes being conducted.**

2.5.2. Second variable of the hypothesis

First variable:	The level of integration and differentiation within the multi-organisation, including inserting the project in a larger program of reconstruction
Second variable:	**The multi-organisation's strategic capacity to attract funding**
Third variable:	The multi-organisation's capacity to share and react to the risks of the environment
Fourth variable:	The level of user's responsibility for individual decision-making among a series of choices offered

A. Possible relationships between the multi-organisation's capacity to attract funding (indicator of inputs No. 1) and the overall performance of the project (including expected and unexpected results and impacts): **The micro-hypothesis is: better capacity to attract funding leads to better performance of the project.**

B. The relationships between the external factors influencing the project and the multi-organisation's capacity to attract funding: **The micro-hypothesis is: if the multi-organisation's capacity to attract funding is low it is due to influences of the environment (external factors).**

C. The relationships between the strategic planning of the organisation responsible for the project and the multi-organisation's capacity to attract funding: **The micro-hypothesis is: a well-established strategic plan that includes positioning the organisation in the market of international funding leads to a better capacity to attract funding.**

2.5.3. Third variable of the hypothesis

First variable:	The level of integration and differentiation within the multi-organisation, including inserting the project in a larger program of reconstruction
Second variable:	The multi-organisation's strategic capacity to attract funding
Third variable:	**The multi-organisation's capacity to share and react to the risks of the environment**
Fourth variable:	The level of user's responsibility for individual decision-making among a series of choices offered

A. Possible relationships between the organisation's capacity to adapt to the environment (indicator of inputs No. 6) and the overall performance of the project (including expected and unexpected results and impacts): **The micro-hypothesis is: the better the capacity of the organisation responsible for the project to adapt to the environment the better the performance of the project.**

B. Possible relationships between sudden changes of the environment (so-called "external factors" in the model of evaluation) and the overall performance of the project (including expected and unexpected results and impacts): **The micro-hypothesis is: external negative factors affect the performance of the project, particularly the capacity to deliver the outputs.**

C. Possible relationships between management tools used to reduce uncertainty (indicators of outputs No. 7, 8, 9 and 10) - uncertainty, it is well known, is one of the major causes of risks - and the overall performance of the project (including expected and unexpected results and impacts): **The micro-hypothesis is: the better the performance in the development of the management tools the better the performance of the project.**

2.5.4. Fourth variable of the hypothesis

First variable:	The level of integration and differentiation within the multi-organisation, including inserting the project in a larger program of reconstruction
Second variable:	The multi-organisation's strategic capacity to attract funding
Third variable:	The multi-organisation's capacity to share and react to the risks of the environment
Fourth variable:	**The level of user's responsibility for individual decision-making among a series of choices offered**

A. Possible relationships between the indicators of community participation (indicators of results No. 49, 50, 51, 52, 53 and 54) and the overall performance of the project (including expected and unexpected results and impacts): **The micro-hypothesis is: higher levels of performance in the indicators of community participation lead to higher overall performance of the project.**

B. The relationship between the level of community participation in decision-making (indicator of results No. 54) and the organisation's capacity to adapt to the environment (indicator of inputs No. 6) and the overall performance of the project: **The micro-hypothesis is: High levels of community participation in decision-making (which transfers the risk associated with acceptability to the users) increases the capacity to adapt to the environment leading to higher levels of performance.**

By proving the micro-hypothesis right or wrong in the four case studies, the corresponding hypotheses are also proved right or wrong. Finally, as proposed in the diagram of the research (Fig. 1.1), the relations found in each of the projects are then compared between the projects and later on between the results of the study and other results found in the literature in order to be able to propose some analytical generalisations.

2.6. Criteria for selecting the case studies

Before presenting the case studies, let us examine the criteria used to select them. The selected case studies are similar regarding the variables that will *not* be considered in the study but are different regarding the research variables.

In other words, the selected projects:

- have a similar goal (low-cost housing reconstruction);
- have a similar environment (Latin American developing countries);
- have similar rationale (post-disaster recovery);
- were all developed in the last five years;
- have different organisational designs
- have a different strategy and structure

Chapter III, Results

Chapter III, Results, part 1

With similar goals at the tactical level and comparable mid-term objectives, four organisations working both as 'promoters' and 'builders' • but with different strategic plans adopted four approaches to the logistics and planning of reconstruction projects with which they chose to become involved. Their initiatives resulted in four different organisational structures, with different strengths and weaknesses and exposure to opportunities and threats. This chapter shows the contextual constraints, the internal reasons and the vision of each of these organisations, illustrating how these three aspects lead them to adopt a particular approach to their projects. Omissions, inappropriate decisions and unfortunate mistakes lead to the provision of a certain quantity of outputs with different standards of quality and in different time frames.

This chapter is subdivided in three parts. Part one presents, in a parallel and standardised form, a summary of relevant data and facts about the four selected case studies to facilitate their comparison. Part two presents (i) an introduction about the environmental aspects of the case studies and (ii) a chronological analysis of the four projects. Part three presents the results obtained by applying the methods (developed in Chapter II) to the case studies.

Even though there is no point in drawing conclusions by comparing individual elements of the projects, seeing their most important aspects in parallel is crucial for the benchmarking purposes presented in Chapter IV. The first two sections follow the structure proposed in Chapter I for the analysis of reconstruction. This includes an analysis of the disaster studying both the vulnerabilities and strengths of the community to face environmental hazards. The analysis of vulnerabilities includes (as proposed by Hewitt, 1997) the review of contextual (historic and geographic) causes

• 'promoter': used here to describe the organisation that plans and initiates ('promotes') the project, besides financing it and/or looking for its funding. 'Builder': used here to describe the organisation that organises construction activities and leads the execution of the project.

of vulnerability. Root causes of vulnerability related with political and social aspects (as proposed in section two) are based on previous studies conducted by specialists in sociological and anthropological issues, but adapted for the present analysis.

The analysis of vulnerabilities and strengths is followed by the introduction to the disaster and the consequences of it. Then, the organisation in charge of the project is presented and finally the project and its major results are described.

3.1. Summary of relevant data and facts about the four selected case studies

This part includes the following tables used to see in parallel data and facts about the case studies:

1. **Location:** location and main facts about the country (source: Atlamedia.com)
2. **Geography:** main characteristics (source: Atlamedia.com)
3. **Major recent disasters and disaster exposure indicators (1970-1999):** according to Charveriat, Celine, Inter American Bank (2000)
4. **Vulnerabilities of the built environment:** main vulnerabilities related to housing construction and the built environment
5. **Socio-cultural vulnerabilities:** Social and cultural factors that limited or reduced the capacity of residents to have access to resources
6. **Political and economic vulnerabilities:** Political and economic factors that limited or reduced the capacity of residents to have access to resources
7. **Strengths and opportunities of the community:** according to the definition of vulnerabilities and disasters, strengths correspond to the factors that permitted the residents to increase their access to resources
8. **The hazard, main event and secondary events:** the events that triggered the disaster
9. **Effects of the disaster:** damage and losses
10. **Implementation of the project:** the process that resulted in the creation of or mobilisation of an organisation assuming the project

11. **The organisation in charge of the project, strategic plan: mission:** as stated by the organisation.
12. **The organisation in charge of the project, strategic objectives:** the organisations' objectives to achieve the strategy proposed
13. **The organisation's strengths to assume the project:** main strengths to conduct the project in the case study
14. **The organisation's weaknesses to assume the project:** main weaknesses to conduct the project in the case study
15. **The organisation in charge of the project, objectives of the project:** the main objectives targeted in the project
16. **The organisation in charge of the project, tactical approach:** the decisions and approach used for the project
17. **The organisation in charge of the project, management tools:** the main management tools used at the tactical level
18. **Results of the project:** some figures about the outputs delivered by the project
19. **Time-table of the main results of the project:** a time-table in standardised format to see the development of the main groups of outputs (in red the time people stayed homeless or in bad conditions of habitat, in white the activities that were not included in the project).

The four case studies selected are:

Case study 1: 2001 earthquake, El Salvador, rural reconstruction project. Organisation responsible: FUNDASAL.
Case study 2: 2001 earthquake, San Salvador, urban reconstruction project. Organisation responsible: The Municipality of San Salvador.
Case study 3: 1999 earthquake, Colombia, rural reconstruction project. Organisation responsible: The Colombian Coffee Growers' Organisations (CGOs)
Case study 4: 1998 after Mitch, Choluteca, Honduras, semi-rural reconstruction project. Organisation responsible: Canadian Centre for International Studies and Cooperation (CECI)

1. Location

2001 earthquake, El Salvador - FUNDASAL

Republic of El Salvador

- Capital: San Salvador
- System of government: Multiparty Republic, Democratic
- Area: 21,476 Sq Km (8,292 Sq Mi)
- Estimated population in 2000: 6,435,600

2001 earthquake, San Salvador – Municipality

Municipality of San Salvador

- Capital of the department of San Salvador
- System of government: Democratic election of the Mayor and the Council.
- Area: 72 Sq. Km
- Estimated population of the department in 2002: 1,831,532

1999 earthquake, Colombia - CGOs

Republic of Colombia

- Capital: Bogota
- System of government: Unitary Multiparty Republic, Democratic
- Area: 1,138,914 Sq Km (439,735 Sq Mi)
- Estimated population in 2000: 38,324,400

1998 after Mitch, Choluteca, Hond. - CECI

Republic of Honduras

- Capital: Tegucigalpa
- System of government: Multiparty Republic, Democratic
- Area: 112,088 Sq Km (43,277 Sq Mi)
- Estimated population in 2000: 6,163,300

2001 earthquake, El Salvador -FUNDASAL

El Salvador is a small country located in a very unstable geological zone with approximately 25 volcanoes and subject to frequent earthquakes. Nearly 150 rivers flow across the country to the Pacific Ocean. Land Use: forested 5%, pastures 30%, agricultural-cultivated 35%, other 30% (1993)

2001 earthquake, San Salvador – Municipality

Located in the centre of El Salvador and at 658 m above sea level, the capital city is located in the department of San Salvador. The municipality is located at 20 mins. from the Volcano Quezaltepec (known as the Volcano of San Salvador). Average temperature yearlong is 25- 29 degrees Celsius.

1999 earthquake, Colombia - CGOs

Colombian central highlands are divided into cordillera central, oriental and occidental, all considered earthquake prone areas. Flood-prone areas are found almost all over the country, particularly the valleys in between highlands and the east prairies. Land use: forested 48%, pastures 39%, agricultural-cultivated 5%, other 8% (1993).

1998 after Mitch, Choluteca, Hond. - CECI

The location of Honduras in between the Pacific and Atlantic oceans makes it extremely vulnerable to tornadoes, tropical storms and hurricanes. It is located in a volcanic and seismic prone area, the lowlands consist of a southern coastal plain. Land use: forested 53%, pastures 14%, agricultural-cultivated 18%, other 15% (1993)

3. Major recent disasters:	Disaster exposure indicators (1970-1999):
2001 earthquake, El Salvador -FUNDASAL 1982: Floods 1986: Earthquake 1998: Hurricane Mitch January 2001: Earthquake February 2001: Earthquake	• Number of disasters during that period: **16** • Disaster occurrence rate per year (during that period): **0.5** • Total fatalities during that period: **2,880** • Fatalities per 1000 hab. during that period according to the population in 1995: **0.5** • Loss as % of GDP from 1995: **22.9 %**
2001 earthquake, San Salvador – Municipality 1982: Floods 1986: Earthquake 1998: Hurricane Mitch January 2001: Earthquake February 2001: Earthquake	Data not available for the municipality of San Salvador.
1999 earthquake, Colombia - CGOs 1982: Climate changes: El Niño 1983: Earthquake 1985: Volcano Nevado del Ruiz 1987: Earthquake 1994: Floods Rio Paez 1999: Earthquake	• Number of disasters during that period: **89** • Disaster occurrence rate per year (during that period): **2.97** • Total fatalities during that period: **29,857** • Fatalities per 1000 hab. during that period according to the population in 1995: **0.8** • Loss as % of GDP from 1995: **11.5 %**
1998 after Mitch, Choluteca, Hond. -CECI 1973: Landslide 1974: Hurricane Fifi 1982: Tropical Storm 1989: Hurricane Hugo 1990: Flood 1993: Hurricane Gert 1998: Hurricane Mitch January 2001: Earthquake February 2001: Earthquake	• Number of disasters during that period: **28** • Disaster occurrence rate per year (during that period): **0.9** • Total fatalities during that period: **17,374** • Fatalities per 1000 hab. during that period according to the population in 1995: **2.9** • Loss as % of GDP from 1995: **82 %**

2001 earthquake, El Salvador -FUNDASAL	The most important physical vulnerability was related to the impressive qualitative and quantitative deficit of housing, originated in part by the lack of a coherent housing policy. Before the disaster, El Salvador already had a deficit of 554,324 housing units (in a country with aprox. 6.5 million inhabitants), with 38% of the families living in overcrowded situations (Ceprode, 1994). Despite this endemic housing crisis, no more than 20 thousand units were built per year (that according to official data). Many of the houses built were not sold or occupied due to the lack of access of the population to mortgages and credit (Lungo, 2001). Even though information and knowledge was available (multiple studies were conducted by Universities and research centres) no changes were ever proposed by the national government to overcome this situation.
2001 earthquake, San Salvador – Municipality	The lack of comprehensive policies for housing had a major effect in the capital city, where rapid migration and lack of urban planning made the situation even worse. By 1999, 27% of housing in Metropolitan San Salvador was inadequate, almost 40% of squatter settlements were built in illegally occupied land while 13% of the population of the city lived at risk of landslides or flooding (Chinchilla, 1999). In terms of infrastructure, the situation was not any better; in 1994, 25% of urban residents in El Salvador did not have regular potable water service and 43% of urban housing presented risks associated with weak structures and inappropriate construction (Source: Ceprode, 1994)
1999 earthquake, Colombia - CGOs	The main causes of physical vulnerability to hazards in rural housing in Colombia were: (1) the lack of proper maintenance of the units and (2) construction on hills and unstable land (Robledo et al., 1999; EERI, 1999). Lack of maintenance of roofs resulted in the collapse of heavy materials such as clay tiles (widely used in traditional typologies). Most of the affected structures were built before 1984 (when the building codes included seismic–resistant standards). Even though the conditions of rural housing are better than in many other Latin American countries, rural housing has less access to infrastructure than urban housing. In 1999, approximately only 40 % of rural residents had connection to a regular sewage system, and 65 % to water infrastructure.
1998 after Mitch, Choluteca, Hond. -CECI	The housing deficit and extreme poverty (approximately one third of the residents of Choluteca do not have legal property) during may years forced the poorest residents to occupy flood prone areas close to rivers and sources of water. 91% of houses were built with roofs made of heavy materials (mostly tiles), coupled with lack of maintenance that represented an increased risk of collapse (Ranganath, 2000). Considering that most of the units were damaged by floods, construction materials had a great impact in the vulnerability, in fact 42% of the houses damaged by floods were built in adobe.

2001 earthquake, El Salvador -FUNDASAL	Rural residents in El Salvador have very low access to education, health care, insurance, banking, loans, and public services. This situation of historical segregation is both a cause and an effect of the poverty of rural areas. As is the case in many other Latin American countries, agriculture and cattle (the basis of rural production) are not profitable economic activities for peasants in El Salvador. Unequal distribution of the land makes this situation even worse for the less wealthy. Lack of political will from the State has not permitted a necessary change in land distribution.
2001 earthquake, San Salvador – Municipality	Lack of infrastructure and planning coupled with rapid and uncontrolled migration to San Salvador from rural areas resulted in the creation of ghettos and informal settlements. New residents in the city have little access to employment opportunities in formal jobs, most of them deciding to work in the informal sector and to live in illegally occupied land. These two aspects keep most of these residents in illegal status and out of the main systems of the city, including education, health care, taxing, voting, banking, etc.
1999 earthquake, Colombia - CGOs	Historical segregation of social classes in Colombia has resulted in extremely unequal distribution of wealth. Social and political indifference towards poverty and rural violence, existing since independence, have mostly affected Colombian peasants, segregating them from the urban citizens. These factors have the consequence that rural residents rarely have access to banking services and health care. The lack of presence of the State in rural areas has contributed to the difficulties of the peasants' rural economy that is mostly based on small-scale agriculture, fishing and cattle. Guild associations such as the CGOs have fulfilled in multiple cases the lack of presence of the State providing support and help to the rural community.
1998 after Mitch, Choluteca, Hond. -CECI	Poverty and lack of education merge as fundamental vulnerabilities of the residents of Choluteca. 73% of Honduran households are classified as poor and 30% of these homes as extremely poor. 60% of that 30% live in the Department of Choluteca. From the residents of Choluteca affected by the disaster, it is estimated that 35% cannot read or write and only 19.3% have had schooling (FUNDEMUN-USAID, 2001).

2001 earthquake, El Salvador -FUNDASAL	Corruption, exaggerated bureaucracy and a high external debt ($1,897,000,000 USD in 1993) characterise the government of El Salvador. Lack of education and segregation of rural residents permit them very little access to political decision-making. Insufficient schooling and high levels of illiteracy among the rural population do not permit peasants to know about and act for their civil rights.
2001 earthquake, San Salvador – Municipality	The illegal status and insufficient education of the poorest citizens of San Salvador do not permit them proper political representation. Liberal and leftists groups claim that national policies lead by the right-wing party have little concern with social issues and attaining social equality (personal communication, Roberto Chinchilla and other municipal officers).
1999 earthquake, Colombia - CGOs	Political and social acceptance of poverty and misery have not permitted attaining social equality in Colombia. The lack of political will towards land reform (demanded by civil groups since the 1940s) to redistribute the land that is concentrated in the hands of a few rich has resulted in insurgence groups called guerillas. Affecting mostly rural areas, ongoing violence has increased the segregation and poverty of peasants. The low price of coffee in the international market (due to extreme competition and over supply) and the general economic recession of the economy in Colombia during the nineties had a major impact in the regional economy of the coffee growers.
1998 after Mitch, Choluteca, Hond. -CECI	The main vulnerability of the residents of Choluteca was, no doubt, the result of lack of employment opportunities in the region. It is estimated that before the disaster, only 40,8% of the potentially working population was actually employed; this figure decreased after the disaster to 32%. 16% of the houses damaged or destroyed by the disaster also had severe damages or collapse of spaces that were devoted to income generating activities (a shop, a small business, etc) increasing unemployment and the lack of sources of income after the disaster (Oseguera, 1999)

7. Strengths and opportunities of the community

2001 earthquake, El Salvador -FUNDASAL	Their capacity to work in construction coupled with easy access to materials (earth, stone, wood, clay, etc) permits rural residents in El Salvador to find solutions for sheltering (basically made by themselves). This practice, common in many developing countries, is usually made without proper building knowledge, without hazard resistance standards and in unsafe locations. However, it constitutes a vital 'capital' for residents to survive in a system where they are usually excluded from access to loans, mortgage systems and the banking services. Peasants' work of the land and long-term residence in the same location (even generation after generation) helps them guarantee land tenure even if this tenure is not legally recognised in official documents.
2001 earthquake, San Salvador – Municipality	Lack of proper housing has forced the poorest sectors of the society to build shelter for themselves. As is in fact the case in many Latin American cities, the capacity of cohesion of these residents is fundamental for assuring illegal occupation of public or private open urban land. Their capacity to work in teams in construction activities and to help each other in meeting their day-to-day basic needs (water, food, health, security, etc.) permits them to consolidate squatter settlements very quickly, even though they live outside of the regular systems of the city and often in illegal conditions. Residents' capacity of cohesion permits them to survive at the same time that makes evictions very difficult and costly in terms of the political image of municipal governments.
1999 earthquake, Colombia - CGOs	Three main strengths helped to the recovery of rural residents: (i) high levels of land tenure; (ii) capacity of organisation for the development of the major economic activity: the coffee industry; and (iii) residents' capacity to work in construction. The capacity of organisation was consolidated 75 years ago with the creation of their own guild: The Coffee Growers' Federation, the organisation that promoted the reconstruction project of the rural area. In the area affected by the disaster, more than 400,000 hectares of coffee production (the most important export product in Colombia) represent 47% of the national production of the coffee industry. The residents' traditional capacity to work in the construction of their own house was to prove extremely useful in the development of the project itself.
1998 after Mitch, Choluteca, Hond. -CECI	In recent years, Central American countries have been targeted as areas of evangelisation by Protestant and Christian churches. As non-catholic beliefs have only a limited influence in Mexico, multiple North American church-related organisations have set up in Honduras, Costa Rica and El Salvador with a great impact in the low-income population. Catholic-based institutions make a constant effort to compensate the influence of foreign organisations. After the disaster, this fact contributed to the development of numerous housing projects lead by religious-based organisations. It is expected however, that many of these projects targeted members of their own communities and beliefs. Some religious-oriented organisations working in Nueva Choluteca included among others: Bolsa Samaritana, Iglesia Santidad, Caritas and Iglesia de Cristo.

2001 earthquake, El Salvador - FUNDASAL	On January 13, 2001, at approximately 11:35 am local time, an earthquake with a magnitude of 7.6 on the Richter scale and a depth of 60Km occurred off the El Salvador coastline. On February 13, 2001 at 8:22 am local time a second earthquake with epicenter in the department of La Paz and with a magnitude of 6.6 Richter scale and a depth of about 13 km struck El Salvador. Aftershocks continued to occur for the following weeks. The two earthquakes affected several of the 14 departments, particularly "La Paz", "San Salvador" (where the capital city is located), San Vicente and Usutlan. Landslides caused by the movement of unstable land and floods caused by the damming of rivers and channels by debris followed as secondary effects.
2001 earthquake, San Salvador – Municipality	Caused by these two earthquakes, a series of landslides (including the well reported one in Santa Tecla) and floods occurred in the capital city. Regular outflow of rivers and channels was interrupted by debris causing floods in squatter settlements.
1999 earthquake, Colombia - CGOs	On January 25, 1999, an earthquake with a magnitude of 6,0 on the Richter scale located in the Volcano "del Huila" struck at 1:19 pm local time the east region of central Colombia, an agricultural region located in the mountains and where the coffee industry is cultivated. Six departments of the so-called "eje cafetero" (coffee axis) were affected: El Valle, Cauca, Risaralda, Qundio, Caldas and Antioquia. The main affected cities were Armenia and Pereira.
1998 after Mitch, Choluteca, Hond. - CECI	Hurricane Mitch struck the Central American countries of Guatemala, Honduras, El Salvador and Nicaragua on October 28, 1998, and continued for eight days. The torrential rains flooded villages, destroyed bridges, dams, roads, infrastructure and destroyed extensive areas of agricultural land and crops (October is the harvest season). Even though several countries were affected, the most severe damage was suffered in Honduras (Ranganath, 2000). Lack of potable water, and effects in the environment were the source of secondary effects in Choluteca. Malaria and other diseases were reported weeks later after the disaster.

2001 earthquake, El Salvador - FUNDASAL	• **Effects in the population:** 1,159 deaths, 8,122 injured, 1,582,428 people affected • **Effects in housing**: 186,444 houses destroyed, 153,011 houses partially damaged, 28,678 houses destroyed in the department of La Paz alone
2001 earthquake, San Salvador – Municipality	• **Effects in the population:** 28,678 people affected by the disaster in the city, 20,000 families needing to be relocated • **Effects in housing**: 929 houses destroyed in San Salvador, 4,945 housing units partially damaged • **Other effects:** 59 retaining walls in conditions of high risk
1999 earthquake, Colombia - CGOs	• **Effects in the population:** over 800 deaths • **Effects in housing:** 1,856 rural houses destroyed, 4,552 rural houses partially damaged • **Other effects:** Losses in the productive sector equivalent to 4.2% of regional GDP, 1,199 buildings for coffee-related micro-industries destroyed and 2,190 partially damaged, 48 schools collapsed, 86 schools partially affected
1998 after Mitch, Choluteca, Hond. - CECI	• **Effects in the population:** 7,000 deaths in Honduras alone • **Effects in housing:** 24,2% of the population was left homeless • **Other effects:** Losses equivalent to 80% of GDP, US$ 800 million in lost agricultural production, 25% of the schools in Choluteca were damaged, one Hospital totally destroyed, 94 bridges completely destroyed and 75 severely damaged, 52 highways destroyed, approximately 22 water mains between Tegucigalpa and Choluteca damaged

	10. Implementation of the project
2001 earthquake, El Salvador - FUNDASAL	Even though a committee that included governmental officers and non-profit organisations presented various projects in a meeting called for the purposes of planning and collecting economic support in Madrid, very little was actually organised after the meeting by the National Government. The governmental strategy was limited to promote the financing of individual projects through direct donations to the organisations in charge of executing the projects. The indifference and lack of leadership of governmental institutions, lead FUNDASAL to start very early to participate in rehabilitation and reconstruction activities. First actions included participating in ongoing projects of providing temporary shelter. For reconstruction, FUNDASAL received support from the German government, through pre-established cooperation agreements between the donor and the Salvadorian Government.
2001 earthquake, San Salvador – Municipality	As had previously been the case regarding the regular provision of low-cost housing, national policies transferred the responsibility of reconstruction to municipalities. Political differences and weak political links between the national government and the municipality resulted in very little cooperation in between the two parties. In fact, there was no transfer of funds or initiatives of financing from the National Government to the municipality. Left alone, the Municipality of San Salvador formed a Working Team that included public officers and experts in the field of low cost housing, while using its regular units to coordinate the reconstruction project. The Working Team was mandated to both plan (promote) the project and execute it.
1999 earthquake, Colombia - CGOs	Just after the disaster, the presidency of M. Andres Pastrana developed a reconstruction program that included the creation of a new body called FOREC with the exclusive mandate of managing the resources available for reconstruction and for outsourcing individual projects. FOREC was formed with a loan of the World Bank and resources from the National Budget. For executing the projects, FOREC conducted a call for proposals that resulted in the selection of thirty-two NGOs, each one of them responsible of reconstructing a village, or a sector of a major city. For the whole of the rural areas and rural villages the CGOs were selected. The CGOs proposed the creation of a new fund including their own resources. A couple of weeks after the disaster, permanent reconstruction in rural areas had begun.
1998 after Mitch, Choluteca, Hond. - CECI	Despite the millions of dollars received by donations and international help, the indifference of the National Government towards reconstruction in Honduras led to the involvement of more than one hundred NGOs in reconstruction activities. By 1998, CECI already had previous experiences working in Honduras and Guatemala. CECI contacted other NGOs in place (including Atlas Logistics) and used the officer that was in Central America to develop the project. Various municipalities were targeted in Honduras and Guatemala. In December 1998 CECI decided to join other NGOs in an ambitious relocation project in Nueva Choluteca.

11. The organisation in charge of the project, strategic plan: mission

2001 earthquake, El Salvador - FUNDASAL	"To promote social development and equality of genders through the improvement of the habitat and the support of productive activities of the rural and urban communities. To become the most important housing-oriented NGO in the region dealing with the most vulnerable sectors of the society. To guarantee the participation of the community in the process of change by generating the possibility of analysis, criticism, self-management and organisation in order to create sustainable solutions for El Salvador." (FUNDASAL, 2001)
2001 earthquake, San Salvador – Municipality	Within the established democratic system of El Salvador, the municipality of Metropolitan San Salvador (the capital city with 1,8 million inhabitants) is composed of the Mayor and the Council (both democratically elected) and includes the administration of seven districts. The administration is mandated to promote the following activities: defend the interests of the citizens, the delivery of public services, planning activities, public representation and control. It is the most important authority in the city. (Adapted from the web site "Alcaldia de San Salvador, Nov. 2003)
1999 earthquake, Colombia - CGOs	"To represent the interests of the coffee growers through the democratic and participative organisation of the members of the guild. The Coffee Growers' Organisations aim to favour the development of the local coffee industry through the improvement of efficiency and international competitiveness, procuring at the same time the integral development of the coffee grower, his/her family and the region." (Federacion Nacional de Cafeteros de Colombia, 2002)
1998 after Mitch, Choluteca, Hond. - CECI	"To fight poverty and exclusion. More specifically, [CECI] strengthens the development capacity of disadvantaged communities; it supports initiatives for peace, human rights and equity; it mobilises resources and promotes the exchange of know-how." It aims to consolidate its position as "one of the largest and most solidly established Canadian non-governmental organisations supporting international development" (adapted from CECI's web site, Nov. 2003)

12. The organisation in charge of the project, strategic objectives*

2001 earthquake, El Salvador - FUNDASAL	- Consolidate the public image of the organisation - Disseminate the concept of development and promote general concern for development-related issues - Conduct a permanent fund raising campaign - Promote project-specific fund raising campaigns - Promote research in the fields of development and housing - Disseminate information through training, education, publications, documentation, etc.
2001 earthquake, San Salvador – Municipality	- Reduce informal markets of the city - Develop projects of infrastructure - Increase control in the occupation of public spaces - Rehabilitate public spaces, particularly in the Historic District - Develop studies on land use and risk mapping - Develop urban plan studies - Control and regulate the Districts
1999 earthquake, Colombia - CGOs	- Position the brand "Café de Colombia" in the international market - Control the sale price of coffee products - Develop social and health programs - Work in research and technology transfer - Provide technical assistance to coffee growers - Consolidate a Mutual Fund of savings and investment - Regulate the policies of the commercialisation of coffee - Compile / document information about coffee growers - Save money and invest to increase the CGOs' Fund - Reinforce local and regional committees
1998 after Mitch, Choluteca, Hond. - CECI	- Promote development in specific regions and countries - Disseminate the concept of development and promote general concern for development-related issues - Conduct a permanent fund raising campaign - Promote project-specific fund raising campaigns - Promote research in the fields of development and housing - Disseminate information through training, education, publications, documentation, etc.

* adapted from official reports and personal communications

13. The organisation, strengths* to assume the project:

	2001 earthquake, El Salvador - FUNDASAL	2001 earthquake, San Salvador – Municipality	1999 earthquake, Colombia - CGOs	1998 after Mitch, Choluteca, Hond. - CECI
Local commitment (commitment with the region)	X	X	X	
Local know-how	X	X	X	
Availability of local information		X	X	
Experience in project implement./management	X		X	X
Experience in housing issues	X			X
Experience in social development issues	X			X
Experience in fund raising (through donations)	X			X
Experience in public works		X		
Previous experience in the region	X	X	X	X
Positive public image	X		X	X
Political independence	X		X	X
Institutional image (as a public institution)		X		
Management and financing capacity	X		X	X
Capacity to regulate norms and codes		X		
Capacity to influence local authorities	X	X	X	
Capacity to influence national authorities			X	
Own economic resources			X	
Local relations			X	
Good relations with local authorities	X	X	X	
International relations	X		X	X

* This list was prepared by putting together the different strengths that were found in the four organisations. From the interviews that were conducted with the officers of the organisations, it appeared that these characteristics were considered by them as being "advantageous" for the development of the projects.

14. The organisation, weaknesses* to assume the project:

	2001 earthquake, El Salvador – FUNDASAL	2001 earthquake, San Salvador – Municipality	1999 earthquake, Colombia – CGOs	1998 after Mitch, Choluteca, Hond. – CECI
Lack of support from national funds	X	X		
Limited own funds	X	X		X
Weak relations with governmental institutions	X	X		
Lack of capacity to coordinate housing projects with other projects of construction of facilities for health, education, security, etc.	X		X	X
No capacity to regulate codes and norms	X		X	X
Little capacity of management		X		
Politically driven rather than technical or management oriented		X		
Little experience in collect of funding from donations and aid		X	X	
Little financing capacity		X		
Little experience in housing		X	X	
Producing housing has indirect benefits but is not the real 'business' of the organisation		X	X	X
Lack of local know how				X
Little capacity to have first hand information				X
Little capacity to influence local authorities				X
Little experience in public works and infrastructure	X			X
High administrative costs				X

* This list was prepared by putting together the different weaknesses that were found in the four organisations. From the interviews that were conducted with the officers of the organisations, it appeared that these characteristics were considered by them as being "disadvantageous" for the development of the projects.

15. The organisation in charge of the project, objectives of the project*

2001 earthquake, El Salvador - FUNDASAL		To promote the development and increase the quality of life of the rural residents of "La Paz" through a housing project To minimise the effects of the disaster in the region of La Paz To reinforce the presence and concern of FUNDASAL in the development of solutions for the most vulnerable Salvadorians To increase awareness of the importance of prevention and risk-mitigation
2001 earthquake, San Salvador – Municipality		To show the concern of the municipality with the disaster and the victims To reduce the housing deficit left by the disaster To overcome the lack of economic resources through the development of a project-based collect of funds
1999 earthquake, Colombia - CGOs	Café de Colombia	To facilitate the recovery of the population to minimise the effects of the disaster on the production of the coffee industry To take advantage of the reconstruction to improve the quality of life of the members of the guild and to improve the infrastructure required for the production of the industry To send the message to the coffee growers that "the guild is there to help you and support you in difficult moments"
1998 after Mitch, Choluteca, Hond. - CECI	CECI	To promote the development of Choluteca residents through a housing project To facilitate the integral recovery of residents To increase awareness about risks and the importance of prevention

* adapted from official reports and personal communications

16. The organisation in charge of the project, tactical approach*

2001 earthquake, El Salvador - FUNDASAL		The tactical approach consisted in using the experience and name of the organisation to develop an international campaign of collection of funds. Targeting a vulnerable rural region (following the strategic mission) an office in the region of La Paz was developed to implement, manage and conduct all the operations of the project with support from the units located in the headquarters in San Salvador. The tactical decisions aimed at the active participation of the municipalities (and transfer of know-how to them) and of the residents (based on a self-help program)
2001 earthquake, San Salvador – Municipality		The tactical approach consisted in the post-disaster reinforcing of the in-house resources with the volunteer participation of specialists to develop a Working Team in charge of project 'promotion' and execution. The plan included developing a comprehensive project to be presented to funding institutions. The original project included several outputs including housing, financial aid, prevention of risk and infrastructure. The housing component targeted active participation of users through a self-help program.
1999 earthquake, Colombia - CGOs	Café de Colombia	The tactical approach consisted in taking advantage of the available structure of the organisation. First, in terms of funding, the existing international relations of the organisation (including its office in New York) were crucial in the search for resources. Second, the relations of the organisation with the National Government permitted introducing the CGOs in the National program of reconstruction. Finally, the network of regional committees was exploited for the direct implementation and development of operations (in-situ). The approach transferred the responsibility of reconstruction to residents and the CGOs constituted a supporting institution.
1998 after Mitch, Choluteca, Hond. – CECI	CECI	The tactical approach consisted in using the resources and experience of the organisation in Central America, basically using the project manager and some resources available in Guatemala. A region was targeted and CECI tried to establish links with other NGOs in place (including Atlas Logistics) while trying to involve local residents as much as possible. The tactical approach concentrated in a self-help program attached to long-term development objectives.

* adapted from official reports and personal communications

17. The organisation in charge of the project, management tools

2001 earthquake, El Salvador - FUNDASAL		• **Type of audit**: internal • **Method used:** aided self-help • **Main innovation:** pre-fab units and close work with municipalities • **Administ. costs:** 7 to 8% • **Roles:** promoter and builder	• **Type of structure:** project manager in place • **Strategy to reduce risks caused by uncertainty:** partnership with the municipalities and close work with the residents • **Staff:** in-house trained officers
2001 earthquake, San Salvador – Municipality		• **Type of audit**: no audit • **Method used:** aided self-help • **Main innovation:** the search for external resources • **Administ. costs:** not estimated • **Roles:** promoter and builder	• **Type of structure:** in house operative units plus special Working Team • **Strategy to reduce risks caused by uncertainty:** include external consultants specialised in housing issues • **Staff:** in-house regular officers plus consultants
1999 earthquake, Colombia - CGOs	Café de Colombia	• **Type of audit:** internal for technical aspects and external for the use of resources • **Method used:** giving options to individual choice • **Main innovation:** transfer the responsibility to users and pre-fab units • **Administ. costs:** 5,5% • **Roles:** promoter and builder	• **Type of structure:** Network of institutions in place • **Strategy to reduce risks caused by uncertainty:** transfer to residents the responsibility of the project • **Staff:** in house regular officers plus specialised auditors
1998 after Mitch, Choluteca, Hond. – CECI	CECI	• **Type of audit:** internal for technical aspects and external for the use of resources (by the the main funding body: CIDA) • **Method used:** aided self-help • **Main innovation:** no innovation proposed • **Administ. costs:** 18% • **Roles:** promoter and builder	• **Type of structure:** project manager in place • **Strategy to reduce risks caused by uncertainty:** partnership with other NGOs, close work with residents, use of experienced staff • **Staff:** specialised officer in place

			18. Results of the project
2001 earthquake, El Salvador - FUNDASAL		• **Total budget:** USD$ 13,400,000 • 200 temporary units in Zacatecoluca • 4400 permanent houses in La Paz (approx. 500 pre-fab) • 353 jobs created in construction	• 63,000 USD$ for local initiatives of development and creation of employment • Education and training for municipalities • Training in construction for residents • Education in leadership for residents • Studies of soil and potable water
2001 earthquake, San Salvador – Municipality		• **Total budget**: USD$ 223,000 • 15 temporary communal units • Reconstruction and repairs for retaining walls • Cleaning and maintenance of canals and drains • Loans for 110 municipal employees	• Risk mapping and a study on vulnerability
1999 earthquake, Colombia - CGOs	Café de Colombia	• **Total budget:** USD$ 66,000,000 • 25,000 food rations • 700 tents provided • plastics for tempor. shelter • 9,800 houses rebuilt • 4,700 production related structures for coffee (beneficiaderos) • 490 schools repaired or rebuilt • 80 water supply systems	• 70 health centres repaired or rebuilt • 2,131 projects of infrastructure for coffee production, sewage, water, electricity • 10,000 jobs created • Information and education for residents (2 guides printed) • Housing exhibition • 17 private construction companies participating
1998 after Mitch, Choluteca, Hond. – CECI	CECI	• **Total budget:** USD$ 125,000 • 52 houses built in cooperation with Atlas Logistics • 118 kitchens • 172 latrines	• Program of leadership and education for the community • Management cooperation with Atlas Logistics for various projects

18. Time-table of main results of the project

2001 earthquake, El Salvador - FUNDASAL

Time:	years			*	weeks				months								
	5 +	1-5	1	0	1	2	3	4	2	3	6	10	12	18	24	36	>
date of the disaster: Feb 01																	
date of the evaluation: 02 03 04																	
R & D																	
emergency aid and rehabilitation																	
transitory housing																	
preliminary studies																	
designs																	
selection of projects / beneficiaries																	
execution of housing																	
execution of infrast. (public serv.)																	
execution of community services																	
execution of "soft" outputs																	

2001 earthquake, San Salvador - Municipality

Time:	years			*	weeks				months								
	5 +	1-5	1	0	1	2	3	4	2	3	6	10	12	18	24	36	>
date of the disaster: Feb 01																	
date of the evaluation: 02 03 04																	
R & D																	
emergency aid and rehabilitation																	
transitory housing																	
preliminary studies																	
designs																	
selection of projects / beneficiaries																	
execution of housing																	
execution of infrast. (public serv.)																	
execution of community services																	
execution of "soft" outputs																	

1999 earthquake, Colombia - CGOs

Time:	years			*	weeks				months								
	5 +	1-5	1	0	1	2	3	4	2	3	6	10	12	18	24	36	>
date of the disaster: Jan 99																	
date of the evaluation: 00 01 02																	
R & D																	
emergency aid and rehabilitation																	
transitory housing																	
preliminary studies																	
designs																	
selection of projects / beneficiaries																	
execution of housing																	
execution of infrast. (public serv.)																	
execution of community services																	
execution of "soft" outputs																	

1998 after Mitch, Choluteca, Hond. - CECI

Time:	years			*	weeks				months								
	5 +	1-5	1	0	1	2	3	4	2	3	6	10	12	18	24	36	>
date of the disaster: Oct 98																	
date of the evaluation: 99 00 01																	
R & D																	
emergency aid and rehabilitation																	
transitory housing																	
preliminary studies																	
designs																	
selection of projects / beneficiaries																	
execution of housing																	
execution of infrast. (public serv.)																	
execution of community services																	
execution of "soft" outputs																	

* in red the period of time people did not have permanent housing, in light gray: expected periods of time

Chapter III, Results, part 2

3.2. Analysis of the four case studies

This section includes (i) an overview of contextual aspects of Latin American countries that had an influence on the development of the projects and that are applicable to the four case studies, and (ii) a chronological history of the projects that 'knits' together the facts and data presented in part one of this chapter.

3.2.1. Overview of contextual aspects related to the political, social, cultural and economic environments in Latin American countries.

In many Latin American countries, political corruption, economic uncertainty, high external debt, social segregation (towards the uneducated poorest) and unequal distribution of land converge both as causes and effects of an unfortunate vicious cycle of underdevelopment. In countries such as Colombia, El Salvador and Honduras, unequal distribution of land has reinforced the unbalanced distribution of wealth, particularly affecting the rural population (CEPRODE, 1994). Besides, the fluctuations of international prices of agricultural and mineral products of export (such as the selling price of coffee and sugar) have resulted in recurrent economic crisis for the rural Latin American population (Pan American Health Organisation, 1994; CEPRODE, 1994). In many of these countries, all these factors have pushed rural peasants to dramatic poverty that, too often, has been accompanied by lack of education and lack of access to public services.

During the twentieth century, insufficient presence of the State in remote rural areas plus economic crises and other social pressures facilitated the creation of rural rebellions in countries such as Colombia, Peru, Mexico, El Salvador, Nicaragua, Guatemala and others (Weisner, 2001). In some cases, these rebellions transformed, during the fifties and sixties into subversive 'guerrillas'. Communist-oriented, these rural insurgent groups were ideologically driven to

combat social and economic inequalities and to eliminate the permissive attitude of the State regarding the persistence of rural poverty (Hays and Matuk, 1995). The guerrillas found an important support for their insurgent activities in the communist and socialist ideologies. This support (that included aid from soviet countries) became a general concern to American administrations that saw democracy and stability in Latin America challenged by growing adherence to leftist movements. Deciding to fight these groups, many Latin American governments declared open wars against reinforced guerrillas. Wars and violence in rural areas added to the vicious cycle of poverty and lack of access to resources to worsen and also become a cause and an effect of ever increasing vulnerabilities.

Very often, rural residents (as is the case in Colombia, Salvador and Honduras) do not have property titles of the land they own. Their ownership is the result of the use of the land during long periods of time that - in many cases - goes back to many generations. Lack of affordable land leads many others to live in areas at risk close to rivers or in slopes or simply in undesirable pieces of land. In many cases, the unsafe conditions of the land also increase the physical vulnerabilities of rural residents.

The low level of profitability of agricultural production accompanied by lack of presence of the State and violence in rural areas, have contributed, in the last twenty years, to the rapid and uncontrolled migration to major Latin American cities (Hays et Matuk, 1995; Pan American Health Organisation, 1994). In fact, this region has already surpassed the rest of the developing world in levels of urbanisation (Charveriat, 2000). At the same time, one-fourth of the work force in Latin America is employed in the agriculture sector, but many of these people barely produce enough to earn at a subsistence level (Pan American Health Organisation, 1994). However, peasants migrating to major cities such as San Salvador, Bogota, Mexico, Sao Paolo, Caracas, etc. do not necessarily find better living conditions (DIRDN, 1996). Unable to easily enter into the regular

systems of the urban community (i.e. the systems of education, health care, insurance, etc.), new emigrants coming from the countryside find occupation in the informal sectors of the economy and are forced to build their own shelter in the illegally occupied squatter settlements.

The rather permissive official policies regarding the occupation of public spaces in many Latin American cities have done very little to reduce the huge impact of informal vendors. Sporadic and more radical programs of 'cleaning' the public space of informal vendors have, on the other hand, resulted in violent riots and a deterioration of the public image of the municipalities (with its consequent political cost in public elections). The solutions to reduce squatter settlements have not been more successful. Small rivers, sloping sites, public spaces, and even private open areas of Latin American cities are illegally occupied by millions of families that live in extremely dangerous situations (Pan American Health Organisation, 1994; DIRDN, 1996; Charveriat, 2000). Lacking basic public services, these squatter settlements are usually located close to sources of water, therefore near rivers or slopes that are either flood-prone or present elevated risks of landslides.

In most Third World cities, almost half the population lives in slums or squatter settlements built informally by end-users and without the participation of architects and professionals of the building industry (Bhatt, 1998). Poor urban and rural residents do not have access to the financial systems available to medium and high economic classes; in fact, it is well known that very few peasants have a bank account. Unable to access the mortgage system (many citizens are not legally recognised as land owners), both rural and urban poor residents do not have another option that building housing for themselves. Common consequences of informal construction of housing in Latin America are, therefore, the lack of proper disaster resistant standards of construction and lack of insurances. While in developed countries the housing insurance system is coordinated (and in a way regulated) by the mortgage banking system, in

developing countries very few families have insurances to cover damages caused by disasters (Lizarralde and Johnson, 2003).

Urban squatter settlements and slums accentuate the differences in between the few wealthy and the poorest, increasing the segregation in between economic classes and facilitating the creation of ghettos.

The existing physical risks associated with poor standards of construction and unsafe locations have only but increased the vulnerabilities of the poor towards natural hazards. Most of central and Latin American countries are located in areas of seismic and volcanic activity and are continuously exposed to tornados, hurricanes and other atmospheric hazards. The so-called phenomena of "el Niño" and "la Niña" produce regularly dramatic changes in weather conditions resulting in floods or draughts. In general, the combination of multiple 'hard' and 'soft' vulnerabilities and the constant natural threats in the region result very often in major urban and rural disasters.

Low-income residents in rural or urban areas not only have vulnerabilities and weaknesses towards natural disasters, they also count with strengths (developed to adapt to the hostile environment they live in) that are crucial in the case of disasters or crises. For example, in the case of rural residents, they usually have the skills and availability of resources to build their own dwellings, giving them the possibility to get easily integrated in aided self-help programs. Urban residents, living in illegal conditions in slums and squatter settlements, usually have strong social relations between the members of the community. This social cohesion facilitates them to cope with their needs (even with few resources) in tacit arrangements in which they help each other. As we will see later, these and other strengths play a fundamental role in the reconstruction projects.

3.2.2. Analysis of Case study 1. 2001 earthquake, El Salvador, organisation: FUNDASAL

Even before the disaster, approximately one third of the six and a half million people living in El Salvador were already homeless or lived in extremely inadequate housing conditions. The lack of a national program of reconstruction lead by the Salvadorian government to deal with the disaster triggered by the destructive earthquakes of January and February 2001, resulted in dispersed, sporadic and ill-funded interventions lead by individual NGOs that were unable to produce holistic conditions of habitat. Despite the experience and positive public image of the organisation and its development-oriented intentions, the project lead by FUNDASAL - as we will see - could not overcome these constraints, providing insufficient conditions of housing without infrastructure or public and community services.

Before the disaster (antecedents of the project)

According to Edin Martinez, general director of FUNDASAL, the main problem with the political approach to housing in San Salvador is not so much the lack of appropriate specialised units, ministries or controls, it is mostly that a coherent national housing policy has not been yet implemented. After more than thirty years of experience in the field, the NGO FUNDASAL (Fundacion Salvadorena de desarrollo y vivienda minima) has consolidated its position almost as a para-ministry of housing. Its activities are developed Nation-wide and they have recently been expanded to Honduras, Nicaragua and Guatemala. In response to the governmental lack of response to the large qualitative and quantitative deficit of housing in El Salvador, FUNDASAL conducts research, promotion, education and physical construction targeted to the economically lowest sectors of the society and particularly the rural population.

FUNDASAL builds an average of one thousand housing units per year under the umbrella of development, education and holistic improvement of the quality of

life. Most of the programs are based on self-help, using local materials and technologies and promoting active participation from end-users. More than thirty years of existence have given to FUNDASAL a respectable image in El Salvador, "Politicians and political parties have changed, but people know that FUNDASAL remains" says Mr. Martinez. Its headquarters in San Salvador, includes a specialised library, centers of research and planning, and administrative and control units, thus demonstrating the organisation's commitment to its strategic plan: consolidate its position as the most important housing-oriented NGO in the region (Martinez, personal communication).

The disaster and first response

After the two earthquakes of 2001, the national government's approach to reconstruction was not coherent with the plans and intentions that were exposed, a few days after the disaster, at an international meeting conducted in Madrid. The planning and funds that were consolidated in Madrid among officers of the government, international representatives and NGOs were never coordinated by the government into a coherent national reconstruction program; on the contrary, the approach released responsibility to individual NGOs to work on their own with direct funds from donor bodies. FUNDASAL took up the challenge and concentrated its efforts on a reconstruction project for the southern region of "La Paz".

Even though the beginning of the project of rural reconstruction in "La Paz" was delayed for almost one year after the disaster, the activities of FUNDASAL to reduce the effects of the disaster started immediately after the earthquakes. After most of the foreign organisations had come in, worked and left (many in the landslides of "Las Colinas" or "Santa Tecla"), FUNDASAL identified the areas that benefited less from external aid – probably for being less attractive to the media and funding campaigns (Martinez, personal communication) - but which also represented major vulnerabilities. Finally the rural region of La Paz (a department in the southern valleys of El Salvador) was targeted for an ambitious

plan of rural reconstruction that invited local authorities to actively participate in a learning-by-doing process.

An unfortunate outcome of the first steps of the project was the dramatic conditions lived in temporary housing provided for both land owners and renters by the national government (and other donors) with the cooperation of the Army and FUNDASAL. The delay in the construction of the permanent housing project led by FUNDASAL (that included in a later stage the construction of permanent masonry units for land owners and permanent pre-fab units for renters), meant that hundreds of families of La Paz lived from twelve to eighteen months in the 24 m2 corrugated sheet shacks of the governmental initiative for temporary housing. These shacks, built by the residents and soldiers of the Army with the help of FUNDASAL and materials given by various donors (BCIE Bank, MISEREOR, etc), constituted inhuman conditions to residents. In fact, referring to the performance of the metallic units when exposed to the extreme heat of the region, the residents called them "microwave ovens". The units were inappropriate for the climate, unsafe for children and the elderly (due to the risk of accidental cuts and injuries with the rough materials) and insufficient space for 18 months of occupation by a complete family (see Fig. 3.1)

Fig. 3.1 Prefabricated units (called by residents microwave ovens) as originally built.

Permanent reconstruction project

Various small projects were developed simultaneously by FUNDASAL. However, the most extensive project (which is the basis of this case study)

resulted from a funding initiative derived from the cooperation agreements arranged between the German and the Salvadorian governments. The project, subdivided into two phases, required a budget of 20 million US dollars, from which the German Government (through the German Bank KFW) gave about 78,5%, the beneficiaries (working in self-help) were expected to contribute with about 19% of the costs, the municipalities with 2% and FUNDASAL (from its own resources) about 0,5%.

Special attention seems to have been made in FUNDASAL to achieve the high level of public image that is required to achieve funding in the competitive market of international aid. Nationally and internationally, FUNDASAL is seen as a non-political organisation. In this regard, Mr. Martinez explains that "though the organisation does not have a political bias it is not apolitically driven; on the contrary, it has a clear orientation towards the achievement of social equality and defence of the segregated poor sectors of the society". Even though this might be seen as a leftist approach in a politically polarised country, it seems to have gained respectability from international donors that see FUNDASAL as a serious and engaged organisation with financial capacity and enough local know-how (Martinez, personal communication; Cardozo, personal communication).

Considering the organisational structure of FUNDASAL, the project demanded the creation of a project unit with an "in-situ" project manager receiving both indirect control and support from FUNDASAL's headquarters in San Salvador. Accordingly, the local office located in the village of Zacatecoluca was equipped with computers, telephone, fax and office material as well as with two trucks and two motorcycles to facilitate the mobility of officers to the dispersed rural areas. Administrative audit by the donor body was conducted through a German officer located in the same office in Zacalecotuca. Even though all the activities were directed and controlled from the local office, the influence of the project reached out over several kilometres, with interventions in eight municipalities.

Specific interventions began with FUNDASAL contacting the affected municipalities and offering its services. Acceptance by the municipality meant that it was committed to become an active partner in the project and not only a passive receiver of help. The new partnership then started a preliminary selection of potential groups of beneficiaries, giving special attention to women, particularly women who were the 'head' of a family. This phase was supported by a survey of the affected population in which FUNDASAL determined which people were affected by the disaster at different levels. After identifying the priorities, local residents were informed who were the pre-selected candidates to be beneficiaries. However, if not included in the list, affected families could still register as potential candidates. With a final and corrected list, the process of final selection started. Priorities were established to concentrate the efforts on the most needy; these included giving priority to single-parent families, families that could participate in the labour force, people with the lowest revenues, etc.

Despite the good intentions in establishing the priorities, a negative side-effect resulted from this selection, since families living in high risk sites were deliberately excluded. This criterion attempted to reduce the probabilities of reconstructing in lots that, even with proper quality of housing, represented risks of landslides or flooding. For such a criterion to be valid, a plan of official relocation of people living in risk-prone land should have been included, as it is very unlikely that the subsequent pressure to relocate has had any major influence on residents that had, of themselves, very few alternatives or means to acquire land in safer locations.

Once the final list of beneficiaries was finished, a two-fold phase followed. On the one hand, FUNDASAL worked closely with the municipalities, in order to transfer better administrative practices, increase prevention and promote awareness of risk reduction (including education and training). On the other hand, direct work with the affected families included transfer of better building

practices, increased knowledge in risk prevention and the execution of the construction activities.

Two types of beneficiaries were identified: (i) land owners and (ii) land or house renters. For each of these two groups, a single model of house was designed. For land owners, a 30 m2 unit in cement blocks. For renters, a metallic structure with panels made of an aluminium and zinc conglomerate. These pre-fab units attempted to permit dismantling and relocation once the lease is over.

Proof of ownership was required for land owners. If their property was not officially recognised by a property title, a process of legalisation to demonstrate previous long-time tenure was required. Legalisation was approved after demonstration of more than five years of possession. This legalisation process, that gave official ownership title to peasants, is expected to have positive long-term effects as it is also a step forward towards allowing rural residents to gain access to the regular systems available to urban citizens (access to loans, banking, health, education, etc.). For renters, a minimum of five years of lease was required in order to be accepted as recipients of the mobile units.

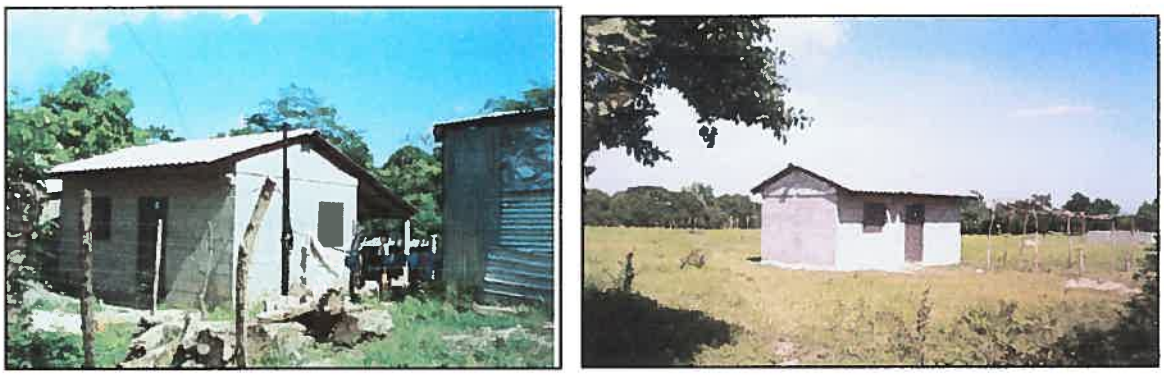


Fig. 3.2 Houses built by the FUNDASAL project. All the units were identical. The façade and the layout demonstrate very little care in the design of the unit.

The units were all built using the same model, a 6x6 m minimum shelter with a social area, two small bedrooms and no inside washroom (see Fig. 3.2 and plans in Appendix 2). The separation of the family in different bedrooms is not common in rural vernacular architecture in El Salvador; however, it has been included as a feature of the units to promote different levels of privacy for the parents. This is expected to reduce cases of sexual abuse between members of the family; Rene Cardozo, manager of the project in Zacatecoluca, claims that residents have accepted this 'new' distribution of spaces very well.

Despite the fact that FUNDASAL claims that it conducts sufficient research in the area of housing, an inappropriate, or at least contradictory decision was made by FUNDASAL in the design of the unit. As explained by Mr. Cardozo, the design took advantage of the fact that rural residents are not used to build inside washrooms in their dwellings; this permitted to reduce the cost per unit considerably. However, consequent problems of water pollution and its effects on public health were reported recently. Hydrological studies have already been conducted by FUNDASAL to determine the depth at which potable underground water can still be found; a much required new project of latrines is now under study.

Construction of permanent housing started one year after the disaster; by June 2002, 1098 houses were finished, still leaving 3,000 units to build. Two types of permanent housing were built: (i) for land owners: cement block houses that were built using local technologies and resources (blocks were bought in the region); and (ii) for renters: metal pre-fabricated houses which are considered here as permanent units (they were given to renters) but yet using a technology that permits to dismantle them when the lease is over. The technology of pre-fab units was selected after reviewing several proposals from the pre-fab market. Each of the masonry houses was built in approximately one month and a half, whereas the pre-fab units were built in approximately fifteen days. Principally due to the savings in time of construction, pre-fab units resulted in an overall

savings of ten percent compared to the masonry houses that cost about $ 3,200 USD. In both cases, participation of at least one member of the family was required to build the house.

Fig. 3.3 User's labour force was used in construction. **Left:** the technology chosen for most of the units was labour intensive. **Right**: detail of the interior of a house. Even though training in construction was provided, many construction defects resulted from the use of unskilled labour.

At least one member of the family had to work a minimum of 45 days from 5 am to 1 pm.; according to Mr. Cardozo, these residents were expected to perform other income generation activities in the afternoon! Even though unskilled labour received assistance from construction workers once a week, construction mistakes are found in several units (see Fig. 3.3).

All the houses were occupied by their end-users; however, the masonry houses lack a veranda or covered area protecting the house from the sunlight (average temperatures in the region range from 25 to 35 degrees Celsius). The fact that all the houses are identical and minimal has resulted in modifications and expansions that are starting to be built (June 2002). The quality of these extensions and the safety of the modifications has still to be seen, but considering the low quality of construction found in the basic units, very little can be expected at this regard.

One of the main weaknesses of FUNDASAL is its lack of capability to integrate housing projects with the other types of projects required for adequate conditions of habitat, such as facilities for education, health, infrastructure, etc. In fact, the lack of integration of housing and infrastructure has had a negative effect on the project. Neither aqueduct nor sewage system nor telephone had been included. Even though most of the houses are located in areas that do not have electricity supply, some pieces of the roof had to be welded, and a drill was required for assembly. As no permanent infrastructure was included in the project, temporary electrical supply for construction had to be provided by the municipalities through the temporary installation of generators. The capacity to properly dismantle and rebuild the mobile units poses many questions, including: (i) the lack of availability of equipment in the future; (ii) the sufficient strength of the components to be dismantled and assembled again; (iii) the inflexibility of the system to make changes using the same components; and (iv) the weakness of the system regarding the use of other materials or technologies for later additions or changes.

Even after construction of permanent housing, the temporary "microwave ovens", have not been dismantled; on the contrary, in most cases they have been adapted for storage of equipment and goods (see Fig. 3.5).

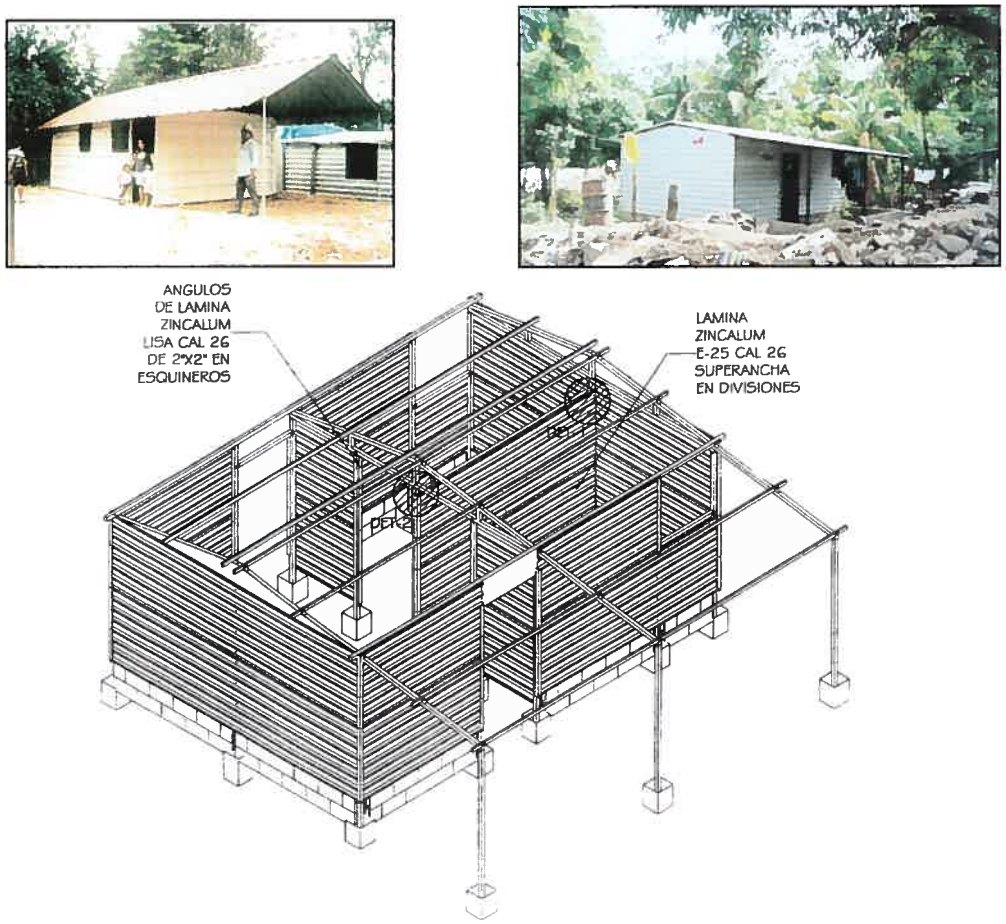


Fig. 3.4 Prefabricated units proposed as permanent housing for renters. **Top-left**: a prototype of the pre-fab company that was selected. **Top-right:** a unit occupied by its residents. **Bottom:** structure of the pre-fab units built.

Fig. 3.5 When permanent houses were finished, the temporary units became permanent, being use for storage or as another room.

'Soft' outputs provided during the project included geological studies and mapping of regions at high risk. Also, with a reduced budget of $ 63,000 USD, a program of support of local productive initiatives was conducted to promote the creation of small industries, cooperatives and businesses. These 'soft' outputs were supported by social workers and sociologists who, when needed, also conducted community meetings, and formed and guided special committees. Two courses of construction best practice were given in two different municipalities. Besides, the direct work with municipalities is expected to have been a seed for creating awareness of danger and risk at the political level.

In a turbulent political environment, with minimum resources of its own, and working both as a 'promoter' and 'developer' of the project, FUNDASAL managed to collect an attractive budget to conduct its housing contribution to the disaster relief. 1,098 houses were built in six months, representing more than two times the normal production of units of FUNDASAL (1,000 units per year). Doubtless, the experience and image gained by the organisation before the disaster was fundamental in obtaining these resources. Even though congruent with FUNDASAL's mission and values, the project was deficient in the time scale and the houses insufficient in quality to cover the needs of the population. However, very little seems to have been learnt in FUNDADSAL and therefore probably little will change for future projects. Officers of FUNDASAL praise the results of the project and compliment themselves, analysing with very scarce constructive criticism their own project in La Paz.

3.2.3. Case study 2. 2001 earthquake, San Salvador, organisation: Municipality of San Salvador (MSS)

Inappropriate political decisions led San Salvador to an unbearable situation of vulnerability where previous experiences and historic disasters did very little to create a political and social culture of prevention and risk reduction. Particularly for the poorest sectors of the society, the long history of disasters that had

affected San Salvador in the last fifty years has only worsened their economic situation and increased their physical and social vulnerabilities. Even though the recovery of the economy after twelve years of civil war (1980-92) keeps a slow but continuous pace, the disaster hit an ill-prepared country that is still considered to be in the midst of its democratic consolidation. The scars of one of the most violent Latin American civil wars of the twentieth century, that took over 75,000 lives in a country with a population of 6,5 million, are still present in the economy, in the society and more dramatically: in the political environment.

Before the disaster (antecedents of the project)

As demonstrated by Ben Weisner (2001), Lidia Salmanca (2001), Ricardo Castellanos (2001) and Mario Lungo (2001), historical causes and political decisions have had a dramatic influence in the situation of housing in El Salvador. These causes can be traced back to external social and political factors which explain the decisions that have been made (or not made) in terms of housing policies. As explained before, El Salvador along with other Latin American countries such as Nicaragua, Colombia, Peru and Bolivia, encountered, in previous decades, the problem of so-called rural 'guerrillas'; in the case of El Salvador, this internal conflict became, at its worst, a violent 12 year civil war. The war had devastating outcomes in the economy. One of its most evident effects was the emigration of Salvadorians to the United States and other countries (many with the status of refugees). It is said that the informal transfer of money from the United States to El Salvador - in the form of economic help from members of the family that have already migrated, towards members of the family still living in El Salvador is today one of the most important sources of revenue for the national economy (Chinchilla, personal communication).

When rural insurgent groups gained enough public support and military power to challenge the stability of local institutions, the North American concern materialised in an ambitious economic and military support to the Salvadorian

right-wing government. The effect of this help (a total of US $6 billion) was that the two armed parties (the government and the guerrilla movement "Frente Foribundo Marti para la Liberacion Nacional -FMLN") found that their forces were balanced and sufficiently weakened to decide, in 1992, to sign a peace agreement. Agreements between the United States and subsequent Salvadorian Governments resulted in political pressure to modernise and adapt Salvadorian public institutions following principles recommended by Washington (source: Weisner, 2001).

It is for this reason that national policies established in El Salvador during the eighties favoured the development of a Neo Liberal State. To compensate for the danger perceived from communist and socialist economies, and the vulnerability of unstable governments in Latin America to drift towards leftist extremes, a strict political plan based in the advantages of the private sector was proposed for Latin America (Weisner, 2001). These Neo Liberal policies were promoted by the World Bank, the Inter American Development Bank, and through political persuasion. For many Central and South American nations, this pressure also included conditioning the delivery of international help and international loans, as well as conditioning commercial agreements, to the application of the new Washington-oriented policies.

These policies attempted to overcome the traditional limitations to development (as they were seen from the "developed world") by reducing the responsibilities and influence of the State, since the State, during the eighties, was associated with inefficiency due to high levels of corruption and extreme bureaucracy. It was expected that, by reducing the influence of the State, transferring responsibilities to the private sector (and its organic market forces) and decentralising the government, corruption and bureaucracy could be minimised, resulting in a more efficient system overall. Besides, government down-sizing and privatisation of public functions were also expected to reduce the financial deficit of most Latin American economies and therefore a process of eliminating public jobs

frequently followed the Neo Liberal policies. However, these cuts eliminated several governmental units and had (and indeed they still have), dramatic negative effects on unemployment rates and therefore on the already deteriorated public image of public institutions.

In many Latin American countries, including El Salvador and Colombia, this new model for the State challenged the need for public departments or units to be in charge of housing and infrastructure issues (Weisner, 2001). It was believed that traditional duties of the government during the sixties and seventies, such as building housing for the poor, were no longer needed if transferred to the "more efficient" private sector. Finally this sector was expected to respond appropriately to the forces of supply and demand with products of better quality. Fuelled by new approaches towards the capacity and importance of people building for themselves (Pugh, 1997), it was believed that if proper infrastructure was given, residents could find a way of finding or building by themselves appropriate quality housing. Public units in charge of building housing were reduced or eliminated, ministries of housing were replaced or transformed into ministries of "public works" and many other national and regional units responsible of housing issues were abolished.

However, the panacea did not materialise as expected. In El Salvador, many of the responsibilities for housing issues were transferred to municipalities, which, all of a sudden, were in charge of developing several new missions (including those related with guaranteeing shelter) and of finding economic resources to meet the new challenges. In terms of housing, the challenges were enormous and the causes of the problems extremely complex.

The disaster and first response

The effects of the 2001 earthquakes in slums in San Salvador seem like an identical "replay" of the catastrophic effects of the previous earthquake which occurred in 1986. Major landslides, the collapse of weak houses, thousands of

houses reduced to uninhabitable conditions and a huge toll of deaths and wounded was, once again, the price that these communities had paid after the accumulation of multiple vulnerability factors. The landslides of "Las Colinas" (or Santa Tecla), that buried hundreds of people in San Salvador were, once again, captured by the media as the most dramatic demonstration of the effects of the earthquake (see Fig. 3.6). As is normal in these situations, there was a momentary sense of anger towards the authorities and a search for responsible parties among the government officers just after the disaster. This has now dissipated with time and a return to 'normality' is felt two years after the disaster.

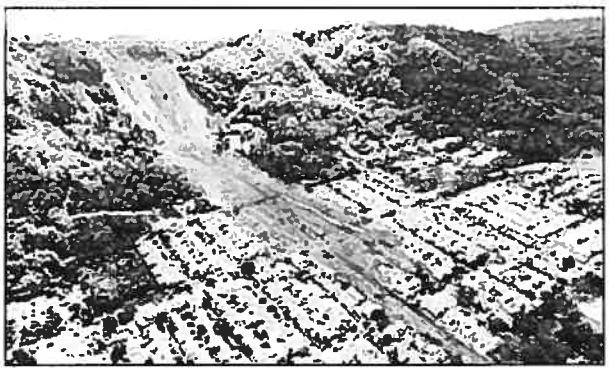


Fig. 3.6 The 2001 earthquake in San Salvador caused landslides in the sector known as "Santa Tecla" or "Las Colinas" (Source: AP).

Immediately after the disaster, considerable resources were attracted by NGOs and National authorities, after aggressive campaigns of fund raising that impressed philanthropists and potential donors by showing the worst examples of destruction and suffering of the residents of "Las Colinas". An 'invasion' of NGOs and international humanitarian agencies followed the disaster during a period of few months. Initiatives of USAID, the Red Cross, and many Salvadorian volunteer groups in the United States, among other organisations are widely reported.

Even though the Salvadorian government of President Francisco Flores expressed its concern immediately after the disaster, a general plan of reconstruction was never developed by the national administration. Instead, fragmented and dispersed initiatives were supported by donations and

humanitarian aid. Since the government did not apply for loans or credits for reconstruction (the external debt in 1993 was already $1,897 million USD), it was not able to manage a central fund for supporting reconstruction projects. Different units of the government (from the Army to various ministries) concentrated on individual initiatives, without proper coordination of resources, logistics, policies, etc. Instead of creating a new unit to take responsibility of the reconstruction, all the units of the government, at all levels and scales, were called on to participate. However, the policies of funding of these initiatives were never clearly determined and public initiatives merged in a disorganised way with projects led by NGOs and private projects. Following the policies of decentralisation and limited national governmental intervention, municipalities were mandated to take responsibility for their own projects.

The limited economic resources and lack of expertise in the municipality of San Salvador was no better to deal with the disaster than it had been to deal with 'regular' homelessness and the 'normal' poor quality of housing. However, a singular political circumstance made the situation even worse. The national government of President Flores was formed by the right-wing party ARENA (Alianza Republicana Nacionalista), while the ruling party at the municipal government of San Salvador was formed by the opposition FNLM (the leftist political representation of the disarmed guerrilla movement) in coalition with the USC (a centre-left party). The historical and ideological opposition of these two groups resulted in a total lack of cooperation in between them and the effects of this on the reconstruction initiatives were catastrophic. The municipality, led by Hector Silva, was left to its own to respond to the effects of the disaster.

Left without any other alternative, the municipality of Metropolitan San Salvador (which comprises seven districts) assumed the responsibility for acting on disaster relief immediately after the earthquake. First, an evaluation of damage was conducted by a special commission; the collection and processing of data obtained from this activity took over four months. Then, the major initiative

conducted by the Municipality was the creation of a Working Team (Comite para la reconstruccion) to develop the project of reconstruction. The first problem appeared when the Municipal Council decided not to participate in the Working Team, seemingly because representatives of the Council proved more interested in their political activities than in administrative or technical initiatives (Daisy Galindo, personal communication). The Working Team was finally composed by officers of the "Department of Planning and Projects" and practitioners in the field of housing, reputed researchers (with credit in the field of low-cost sheltering), and other multi-disciplinary volunteers. Considering the profile of its participants, the team seemed to be well equipped for the challenge. In a special general assembly of the Council and acting very rapidly, the team was officially created (without delegates from the Council), one week after the second earthquake (February, 2001) with the mandate of assuming the responsibility of both organising (promoting) and executing the project.

Permanent reconstruction project

The first task of the Working Team, that met once a week in a general assembly, was to define the scope of the project. An ambitious agenda, that included the construction of more than 6,000 housing units, reconstruction of infrastructure, social programs, etc. was defined. The project was well designed in terms of the outputs required, covering both 'hard' and 'soft' aspects of reconstruction (education, infrastructure, housing, credits, environmental projects, etc) and including a comprehensive plan of mitigation, risk reduction and risk mapping.

Plans and construction documents for the projected prototype house were prepared and ready to begin construction (see in appendix 2 the plans of the project in San Salvador). However, the main obstacles appeared in the search for funding. Neither at the local, nor at the international level was it possible to materialise enough economic help for the initiatives. Unable to obtain loans or credits (the initial target was $2 million USD), the municipality's only chances of funding came from donations and humanitarian aid, mostly from supporters of

the political party of the mayor. "Private loans are extremely expensive (13% interest rates) and even though the interest rates of international institutions are lower (5,5%), the requirements of international Banks are very strict. Not even the World Bank would have given us money because we do not have any more capacity of financing" explained the director of the program. A national ban on the transfer of large funds coming from international aid to municipalities without passing through Congress left the MSS in a "cul de sac". Not only it did not have the funds to reconstruct nor did it have the flexibility to collect its own resources without taking the risk of facing corruption and deviation of funds at the level of the National Congress.

The limited resources that finally could be, and were, allocated from the municipal budget, plus a very little money collected from donations, were only enough to accomplish the maintenance of water channels, to adapt a few tents for temporary housing and to provide a few minimum subsidies for housing to employees of the municipality. The housing project was abandoned without any single unit built, the Working Team was removed from the duties of execution and transformed into a consultant role. Finally, with little chances of providing any additional help, the Working Team was dissolved by April 2002. One year and a half after the disaster, the national government was trying to promote a relocation project for 928 families, these families were given materials (wood and corrugated sheets) for building a temporary shack in a village called Tonocatepeque, situated a one hour drive from downtown San Salvador (obviously relocated residents do not have cars). Even though Tonocatepeque was still in its early phases of development, by June 2002 it was already recognised as one of the most dangerous areas of the region, it did not have any infrastructure and the access to it was extremely risky even for the police.

Today, the MSS is working on other "important issues", reconstruction is no longer a priority and even though a spirit of prevention and risk reduction is perceived by municipal officers, very little has changed in the city. As is the case

for many other Salvadorian municipalities, the plan of urban development (POT) proposed by the city was not approved by the National Congress. Squatter settlements keep growing accompanied by increasing urban risks. Major risk-prone areas have been mapped and documented but thousands of families still live on riversides and risk-prone slopes. San Salvador is once again waiting for the next disaster to happen.

3.2.4. Case study 3. 1999 earthquake, Colombia, organisation: Coffee Growers' Organisations

A seven-year recession in the economy and increasing violence caused by the 40 year-plus armed conflict in Colombia were already enough worries for the National government before the disaster. However, in the midst of the economic crisis and the ongoing armed conflict, a Colombian organisation not specialised in housing, with no expertise in traditional projects of development (as understood by development-oriented NGOs), and with little experience in post-disaster reconstruction, developed an ambitious project of housing and infrastructure reconstruction that included more than 14,000 individually customised projects of housing, infrastructure, income generation, community services and others in less than eighteen months. In order to understand how this was possible it is necessary to understand first the type of organisation that conducted the project.

Before the disaster (antecedents of the project)

In 1927 a group of Colombian coffee growers created a guild or federation called "Federacion Nacional de Cafeteros de Colombia". Today, the Federation along with its local committees constitutes the Coffee Growers' Organisations (CGOs), a non-profit non-political guild that aims to control and support the coffee market. The CGOs are, in reality, a pyramidal network of institutions at different levels (national, regional and local). For the purpose of the present study we will

consider all these organisations (the National Federation and its local committees) as one single organisation (chapter IV develops a complete analysis about the organisational structure of the CGOs).

Under the supervision of the Colombian Government, and financed through a tax on coffee exports, the CGOs protect coffee producers by buying and reselling their produce on the international market. This mechanism guarantees a regular income to the coffee growers throughout the year. The CGOs develop programs of social assistance, research, promotion, infrastructure, loans and market studies. They also control the quality of the product, defending the interest of 300.000 small-scale independent workers (Federacion Nacional de Cafeteros de Colombia, website, 2002).

The disaster and first response

On January 1999, a 6.2 (Richter scale) earthquake struck the west high mountain region of the country. Affecting five Departments and destroying a great part of the region where the coffee industry is concentrated, the earthquake constituted an additional threat for the already bad export situation. Immediate response, led directly by the Presidency, included declaring a "state of emergency", this permitted the President to make certain decisions without the regular time-consuming consultations in National Congress. Some measures included declaring an exceptional two-year increment on regular taxes and applying for an international loan to the World Bank and to the Inter-American Development Bank (IDB). These measures resulted in the creation, two weeks after the disaster, of a National Fund for reconstruction. The fund (called FOREC), permitted an intervention of almost one million US dollars with the exclusive mandate of managing, outsourcing and controlling individual projects of reconstruction.

Fig. 3.7. House collapsed. Inappropriate construction practices and construction in unstable land increased the physical vulnerabilities of the region.

Colombian public institutions, as is the case in many other developing countries, are associated with extreme bureaucracy, slow procedures, corruption, and inefficiency. Therefore, the government opted for an institutional structure that involved the participation of the private sector and multiple NGOs. In fact, in order to conduct specific projects, FOREC conducted a call for proposals to select the most competent NGOs in the country. From this initiative, 32 organisations were selected and mandated as being responsible for a specific village, or part of a major city. For the reconstruction of the rural areas and towns of maximum 20,000 inhabitants, the CGOs were selected.

The CGOs (as a network including the Federation and its committees) had several qualifications that ensured they could attend to the peasant communities' needs: (i) support and credibility from the community; (ii) infrastructure spread throughout the rural areas; (iii) administrative and financial capacity and organisational infrastructure; (iv) local know-how; (v) availability of its own resources; (vi) independent decision-making and (vii) national and international commercial and political contacts. Besides, the CGOs have a hierarchy of organisations at different scales: national, departmental and local (municipal) committees, which together, constitute a well-arranged network of institutions with different levels of influence.

Before being mandated by the FOREC, and immediately after the disaster, the CGOs took measures to mitigate the effects of the earthquake. However, considering that the CGOs were not disaster-assistance organisations, they were not in a position to assume all the required roles of rehabilitation and reconstruction. Their initial activities were oriented to help distribute external aid, reactivate the industry, re-establish conditions for the collection of the season's harvest, and prevent migration to main urban areas. The CGOs co-ordinated national and international organisations and resources to guarantee assistance for the peasant coffee workers.

The more relevant activities targeted for the rehabilitation phase were the provision of tents, materials for temporary shelters, food distribution, temporary infrastructure and a census of residents. For permanent reconstruction, the following activities were targeted: funding, housing reconstruction, reconstruction of infrastructures related with the coffee industry, general infrastructure, community services, information, education and technical assistance.

The measures taken by the CGOs not only were targeted to an important productive sector of the economy, but also to one of the most potentially vulnerable communities. Poverty, lack of education, lack of support from the government, and lack of adequate transportation systems, characterise rural areas in Colombia and are factors that could have amplified the negative consequences of the disaster.

The pre-established international relations of the CGOs (including their offices in New York and some cities in Europe) were crucial for the development of the initiatives after the disaster. The CGOs acquired, through negotiation with the German Government, 800 tents to lend to coffee growers' families, the provision of tents was complemented with technical assistance to put them up and construction workers were hired to assist residents in the process of installation. Through community participation initiatives, the CGOs established links between

external institutions and residents. Such is the case of the distribution and installation of the special emergency plastics donated by OFDA (American Government's Office for Disaster Assistance) for the construction of temporary shelters. In this program, where 150 small farms benefited, residents contributed with their labour and supplementary materials while contractors were hired to bring technical support to victims in the installation of the plastics. Shelter was not the only concern of the rehabilitation phase, in fact, during the first month, local committees of the CGOs contributed together with "UMATA" and "ICBF" (Colombian institutions committed to social aid programs), to the distribution of 25,000 food rations donated by the UN World Food Program. Also for the repair of rural infrastructure, the CGOs co-ordinated their own resources, labour force and official entities (such as the "Empresa de Energia" - in charge of the provision of electricity) to mitigate the damages caused in sewage, water, electricity and communication systems.

Permanent reconstruction project

As was the case in rehabilitation activities, permanent reconstruction also attempted to deal not only with the 'physical' needs of the victims (shelter, money, food, etc.), but also with 'soft' factors such as community organisation and participation, education, decision-making, information, employment opportunities, and economic reactivation. Soon after the disaster, and in order to asses the magnitude of the damage, a census was conducted; this census included the evaluation of each of the rural houses of the five departments; the task was conducted by eleven engineers in just one month. According to the census, 6,648 houses needed to be reconstructed for coffee workers and 2,972 coffee industry infrastructures needed to be repaired.

For this challenge, the next and most important step was the creation of a parallel fund to be managed by the CGOs. The new fund, called FORECAFE, (Fondo para la reconstruccion del area rural cafetera) was created with savings of the CGOs, resources transferred from the FOREC and private donations

(made by Starbucks coffee, Red Cross, ECHO and others). From the total resources, equivalent to US $ 50 million, a first phase called FORECAFE 1 was created. FORECAFE 1 was designated to provide money to affected coffee growers and coffee workers.

Considering the efficiency and advantages of these first initiatives, the central government asked the CGOs to manage a second phase: FORECAFE 2, to provide subsidies and loans to non-coffee workers' families or residents of small rural towns (of less than 20,000 inhabitants). One year later and after the evaluation of the positive results of these two phases, the central government asked once again the CGOs to manage a third phase, FORECAFE 3. This last phase was designated for community services.

FORECAFE 1 met the needs of: housing, productive infrastructures for the coffee industry, public services, and programs of assistance and social development. FORECAFE 2 was designated for housing reconstruction and relocation. FORECAFE 3 was designated for the construction of schools, roads, health care centres, police stations, churches and social activity centres.

Instead of providing finished houses and infrastructures, the CGOs opted for a strategy where individuals received financial aid and were responsible for making their own decisions about the construction they wanted. This strategy was implemented for the following reasons:

- As the community's economy is based on individual agricultural activities, most of the families owned land
- Farmers could develop self-help construction, for the following reasons:
  - Farmers have skills and knowledge in construction
  - Their extended families allow many people to work on each dwelling
  - The regular season of harvesting was almost 5 months after the disaster, leaving the peasants with free time for other activities

- Farmers work individually and run their own businesses, which allows them independence to manage their time

- Construction materials were available in rural areas
- If some families could not or did not want to adopt a self-help construction approach, a labour force was still affordable to hire
- Rural communities have a deep-rooted sense of mutual co-operation.

To get access to money, rural residents could apply to two different sources: the loans from the Central Government, or the funding from FORECAFE, for their house and/or infrastructure or production-related structures. For housing, two possibilities were offered by FORECAFE 1: a subsidy of $4,000 USD and an extra loan of $1,000 USD. For infrastructure and production-related structures two possibilities were also offered: a subsidy of $2,000 USD and an extra loan of $3,000 USD.

In all cases, and in order to guarantee that the use of the resources fitted the priorities of the program, subsidies and loans were given under promissory notes with a time limit requirement. This meant that if the construction was not finished in the specified time, and following hazard-resistant specifications, the money had to be paid back immediately to the fund. As each NGO in charge of a zone developed a different program of reconstruction, many housing products and programs were simultaneously offered. The CGOs project allowed people to repair or build houses with any of the different choices available in the market. Therefore, affected families could receive financial aid, infrastructure, technical support for their industry, information, and technical assistance promoted by the project with any of the three possible housing options: (i) prefabricated houses promoted by the CGOs, (ii) houses from others NGOs' programs, or (iii) individual option.

For the construction, people could choose between building themselves or hiring labour. Whatever the option used, the house had to be hazard resistant to be

eligible for the money of the funds. Twenty-three specialised engineers were selected to conduct the following tasks: (i) approve the hazard-resistant quality of the units, (ii) approve the conformance of the constructions with ecological and environmental standards proposed by the CGOs; and (iii) approve the monthly construction payments. The ecological and environmental requirements included: considerations about the use of wood, pollution of water and a norm that obliged the construction of a sewage system (mostly septic tanks). After approving the quality of construction and the respect of norms, the engineers (working in the capacity of construction auditors) authorised, at different stages, the monthly payments of the subsidies and loans. This process guaranteed that the money was used, and only used, in conformity with the priorities of the project.

Fig. 3.8 Self-help produced houses. Residents acquired loans and subsidies and built the type of house they wanted according to their needs, capacity to work in construction and availability of their own resources.

The prefabricated housing initiative was based on three different prototypes of one-storey units designed by officers of the CGOs and based on traditional typologies used in vernacular housing in the region. The prototypes included semi-open verandas, and pre-designed possibilities for expansion and adaptations (see appendix 1). The units included two bedrooms, a kitchen, one indoor bathroom and a social area. The general layouts and proportions of the units corresponded to traditional dwellings, and typical cosmetic features of the vernacular architecture in the region were included in the design. The units were

designed over a grid of 1.20 by 1.20 m. to be produced with prefabricated modular systems (see appendix 2). The bathroom and the kitchen were placed back to back to optimise services installations. Openings in the facades were distributed and proportioned to minimise waste of material in frames and panels. In the bedrooms, the windows were placed at the opposite side of the entrance door. This not only facilitates cross ventilation in the room but also brings a better visual impression when entering the space, making it look bigger. A simple and efficient electrical installation was included.

By allowing cross ventilation and including covered semi-open areas and extended roof cantilevers (called 'aleros' in Colombia), the design of the prototypes responded to the hot temperatures and heavy rains of the region.

Fig. 3.9 Self-help made constructions. **Left:** house built using pre-fabricated components; the design corresponds to the prototypes proposed by the CGOs. The layout, scale, distribution and multiple details correspond to traditional vernacular housing in the region. **Right:** Customised structure for processing coffee beans (called "beneficiadero").

Pre-fab companies offered competitive prices as the government offered tax benefits to construction companies working in the affected area. The economic recession in the rest of the country attracted the participation of pre-fab companies to the affected region and motivated them to lower their regular costs.

The CGOs opened a call for proposals to select the companies to participate in this initiative and to set up a housing exhibition under the auspices of the CGOs. From more than 50 proposals, 17 pre-fab companies were selected according to the following criteria: (i) the quality of the system, (ii) the price, (iii) the production capacities, (iv) socio-cultural acceptability of the technology, and (v) the scope for the use of local labour force (see Fig. 3.8). Selected companies used different finishes and some used traditional colours and elements to match their proposals to the typical architecture of the region. This aspect gave multiple choices to the clients, allowing them to select the most appropriate option.

Fig. 3.10 Houses offered in the housing exhibition. Different materials and technologies were proposed by the construction companies selected.

In order to increase the possibilities of choice for the community and to help the peasants visualise what they were choosing, the CGOs organised a housing exhibition of prototype full-size models of the selected companies (see Fig. 3.10 and 3.11). Even though very few finished units were actually sold, many housing components were purchased by residents in order to construct their dwellings. This is in part because rural residents are not used to 'buy' a house since, in their experience, building a house for them is a long self-help process (even lasting many generations) where the house 'grows' according to the needs of the family. According to Edgar Echeverri, Director of the department of production and development in the CGOs headquarters, in many cases, the exhibition was a source of inspiration for many residents who copied the models to build them

by themselves; sometimes buying individual components such as windows, doors, tiles etc. from the pre-fab companies (Cafered, 2000). It also helped counteract the speculation in the prices of construction materials, which were increasing very fast since the disaster. For the residents, it was an educational exercise, an opportunity to buy quality products and an opportunity to learn that they had the responsibility for, and the liberty to complete their own reconstruction. Finally, from the perspective of architectural design, the exhibition is a note-worthy example of culturally appropriate housing designs coexisting with appropriate technological solutions from which many lessons can be gained for future housing projects.

Transferring the responsibility of construction to residents had a positive effect in the optimisation of resources. Residents built their houses using the most efficient and economic components according to their own taste; besides, many recycled materials from the ruined or damaged house, reducing the costs of construction. Toilets, sinks, windows and doors from the 'old' houses were usually recycled by the users in the construction of the 'new' homes. The savings resulting from this were used in some cases to improve the quality of other materials or to build a more spacious or comfortable house.

Concerning the development of individual options and self-help construction, the CGOs supported the rural community with education and technical assistance. Special loans and training programs provided by the CGOs also supported the construction of infrastructure. Water tanks, septic infrastructures, water supply, electricity and telephone connections were supported in this way to complete the housing construction.

Fig. 3.11 Views of the housing exhibition. The exhibition was organised by the CGOs to promote a parallel program of pre-fab housing targeted to give alternatives to the beneficiaries of the project.

Even though the project did not target renters specifically, thirteen thousand renters benefited from the various projects developed by the owners of the houses or the owners of the farms. However, rural residents living in illegally occupied lots were not covered by the CGOs' project. This population, that in general lives in risk-prone areas (hills and close to rivers), did not have access to the outputs of the project. The efficiency of FOREC 1 and 2 contrasts with the indifference showed towards this group that, in fact, did not receive any solution - neither from the CGOs nor from the government. Since the earthquake, ample criticism has been made in the media to both FOREC and FORECAFE for not including this vulnerable community. The CGOs claim that the government should have taken responsibility of it, adding that many people came to the region after the disaster hoping to take advantage of the generous services offered by FORECAFE 2.

With FORECAFE 3 and in a period of two years, a total of 490 schools were repaired (some rebuilt) using a modular system of pre-fab components. The construction of schools was carefully followed and supported by a four-year initiative launched by the Colombian First Lady to bring education to the poorest sectors of the society. Besides, 80 water supply systems were repaired, 70 health centres were reconstructed, churches, police and community centres

were either repaired or reconstructed in the departments of Caldas, Quindio, Antioquia, Risaralda and Cauca (FORECAFE, 2002). Private construction companies were hired for some projects and a similar mechanism of management to the one used in FORECAFE 1 was employed.

For the three phases (FORECAFE 1, 2 and 3) an external audit was engaged by the CGOs, the well known international firm Deloitte and Touche was responsible for accounting and controlling the use of resources and the management procedures used by the CGOs. The total administrative costs (including the management of the project) for the three phases are estimated to be only 5,5 % of the total budget.

Rural communities in Colombia usually receive little assistance from the central authorities and there is a lack of education and organisational support. The constant contact of the CGOs with the rural community gave support and credibility for the programs, and mitigated the psychological effects of the disaster. To reinforce the self-help initiatives, the CGOs published two educational guides for the construction of earthquake resistant houses (in wood and in concrete). The guides, illustrated with drawings and sketches, provided not only technical instructions but also general knowledge in a basic language appropriate for communities with little education.

As a complementary activity, the coffee worker's organisations provided information and advice to the community about the following aspects:

- Technical advice on how to build septic tanks or floor slabs
- Hazard-resistant principles
- How to select the appropriate house
- How to maintain the traditional identity of the houses after the disaster
- How to deal with psychologically affected survivors
- Evaluation of damage (including a housing census)
- Projects in progress

- Requirements to access the available financial resources
- Promotion of the various products (housing, tents, food, etc.)
- Results and preliminary evaluations of the programs

Information was provided in newspapers and magazines published by the CGOs. Some of these are: "Cafered", "Quindio", "Actualidad Cafetera" (published by the Quindio committee), "Panorama Cafetero", and "El Caficultor". Other sources of information were local newspapers such as "Café 7 dias" and "La Tarde".

A total of 26,222 hazard resistant and environmentally friendly individual projects were completed in three years (14,138 in the first year) according to the needs, capacity and expectations of their own users. A total budget of $ 66 million USD was managed by the CGOs for this project. Transparency and efficiency of the process have been observed by the United Nations, the World Bank, the Presidency of Colombia and the external audit. As it will be explained in chapter IV, an innovative scheme in terms of organisational design was used, useful decisions were made at both levels: the national program of reconstruction and the regional project; certainly, appropriate conditions merged together to contribute to the positive results of this project.

After almost four years of existence, and when the proposed tasks were all accomplished, the national fund FOREC was dissolved. With its dissolution, collective experience and knowledge gained through the reconstruction experience was probably lost. By adopting this model, centered in a new temporary unit with the exclusive mandate of reconstruction, little experience and know-how is expected to have been transferred to municipalities and local authorities that, in general, were kept out of the main decisions of the fund (and this, as was previously explained, to avoid the risks of corruption).

When FORECAFE 3 was finished and considering the positive results of rural reconstruction, the National Presidency invited the CGOs to develop other housing projects in other areas of the country. Edgar Echeverry (director at the National Coffee Growers' Federation and one of the directors of the project) explains that the answer of the CGOs to this invitation was: "No thank you, our business is to grow and sell coffee not to build houses". On January 17th, 2004, an earthquake of magnitude 5.2 in the Richter scale hit the same region that was devastated in the earthquake of 1999. This time no deaths, destruction or physical damages occurred, demonstrating that the vulnerabilities of the region were largely reduced (El Tiempo, January 18, 2004, www.eltiempo.com).

3.2.5. Case study 4. 1998 after hurricane Mitch, Choluteca, Honduras, organisation: CECI

In a traditional scheme of international intervention for development, the Canadian NGO CECI got involved in a large relocation initiative that included creating a new village called "Nueva Choluteca" in one of the poorest regions of Honduras. The weaknesses of the specific project carried out by CECI are over shadowed by the monumental failure of the relocation program. "Nueva Choluteca" is today a symbol of the negative consequences of badly planned relocation. Poor quality of housing, non-existing infrastructure, increased segregation, lack of employment opportunities, high rates of crime and public health problems characterise this new hamlet. Even though the responsibility for the relocation program at large is shared among various NGOs, the specific project carried out by CECI can be studied and analysed on its own.

Before the disaster (antecedents of the project)

Commuting from Tegucigalpa to Choluteca by bus is a long journey; the trip is made in an old overcrowded bus, without air conditioning and endless stops starting in the highlands of South-Central Honduras and finishing in the extended valleys of the Pacific (close to the border with El Salvador). What really

makes this journey special is not the extreme hot weather, the multiple rivers crossing the southern valleys and making of them extensive flood-prone areas, or the dilapidated houses standing along the road in small hamlets, it is to realise that Choluteca is an impoverished enclave of the country surrounded by no apparent economic activity. As the bus approaches Choluteca, one has the idea that sources of income and production have disappeared (or never existed) in the city and its rural proximity. Extremely scarce agricultural production and cattle, no industry or manufacturing activities, very little new construction and an incipient tourist industry are clear signs of the dramatic poverty of the region.

In fact, it is estimated that before the disaster, only 40,8% of the potentially economic-active population was working. A figure that got reduced to 32% after Mitch (Oseguera, 1999). Honduras' public debt in 1993 was greater than its Gross National Product (Atlapedia, 2003), the country was considered as highly corrupt and despite the fact that almost 60% of the population was rural, Choluteca was a dramatic example of unequal distribution of land. These aspects merged together with poverty, and poverty translated into lack of housing, which resulted in occupation of areas close to rivers and sources of water (for personal consumption, fishing and agricultural activities).

The disaster and first response

When torrential winds and rains caused by Mitch washed out the country in 1998, one third of the population was badly affected, mostly the poor residents. Large amounts of resources were injected in the country in the first weeks after Mitch. However, these resources did not materialise in a housing reconstruction program from the national government. Within this context, more than one hundred NGOs had to assume the responsibility of housing construction (Ranganath, 2000).

Fig. 3.12 Gas station in Choluteca just after Hurricane Mitch. Source: http.www.agenvsafety.tamu.edu

When Mitch struck Central America in 1998, CECI already had experience of work in Honduras and Guatemala and experience in disaster mitigation from a project conducted in Rwanda (1996-97). Consistent with the mission and objectives of the organisation, a program of reconstruction was then established for Honduras and Guatemala. This program included specific interventions in seven municipalities of Guatemala and six in Honduras. Even though all these interventions were targeted to housing construction, they are considered here as a program and not as a single project due to the fact that the conditions and participants on each of the interventions were different. The services and products offered, the typologies and the technologies used varied from project to project; besides, the partnerships established by CECI resulted in different temporary multi-organisations for each of the interventions. The program built a total of 2,087 houses in both countries from which about half of them were built in Honduras.

Permanent reconstruction project

The extensive damage in Choluteca and the lack of affordable safe land in the city led the organisations working there to believe that a relocation plan was required for this area. A local bank (Banco Occidental) proposed the use of one of its lots (117 hectares) in a 'safe' area 15 Km away from Choluteca. The land was subdivided in 2,154 individual lots without any apparent urban design, urban

morphology, transportation or environmental considerations. The rough urban distribution included two principal streets of 12 meters width (exaggerated for a residential neighbourhood of one-story units) and lots of 10 by 20 meters. This rather randomly chosen distribution resulted in a spread out suburb-like plan of detached units that certainly challenged the sustainability of the project. As built, this urban configuration made construction and maintenance of infrastructure (water, sewage, electricity, drains, telephone, etc.) more expensive at the same time that it increased costs associated with the provision of other services (security, post, cleaning, waste collection, etc.) (Schoenauer, 1994). This suburb-like low-density 'plan' contrasts with the elegance and effectiveness of the old Choluteca city, where vernacular housing, traditional streets and public spaces still represent an appropriate human scale and urban charm.

In "Nueva Choluteca", the units are setback three meters from the street and separated between them by 4 meters; even though space is available for expansion, certainly the size of plots do not allow for any agricultural or cattle activity. It can be said that lots are not large enough to allow the traditional exploitation of the land but neither are they well arranged to contribute, with a higher density, to the sustainability of the village (see Fig. 3.13).

Fig. 3.13 View of the units built in Nueva Choluteca. All the houses built by the residents using a labor-intensive technology were identical.

Individual lots were sold by the Banco Ocidental to 'beneficiaries' in the basis of monthly payments of 1,701 Lempiras during 10 years ($1 USD = 17.19

Lempiras, Dec, 2003). If we consider that only 33% of the residents of "Nueva Choluteca" was working in 2001 (FUNDENUM-USAID, 2001) and that 80% of that 33% received less than 2,000 Lempiras per month, it is easy to understand that the project was unfeasible in economic terms.

However, a great number of local and international organisations got involved in this project. These included Caritas, Atlas Logistique, Iglesia de Cristo, Medecins Sans Frontières (MSF), Organisation de Immigration et Migration (OIM) and CECI. UNICEF also joined the NGOs in place to build school buildings. With no single leader, each organisation assumed the construction of a sector. The Spanish neighbourhood built by the "Cooperacion Española", the Samaritana neighbourhood by the NGO of the same name, and so on. Even though more than 24 NGOs were working in place, none of them assumed the responsibility of building roads, water systems, electricity systems, sewage, drains, parks, sidewalks; not even planting a tree, or building a market, urban commodities or public facilities (see Fig. 3.14). The only infrastructure-related service offered in Nueva Choluteca is a small health center, an improvised police station and two uncompleted schools.

Fig. 3.14 View of a suburb-like neighbourhood in Nueva Choluteca. At the right side of the street the houses built by CECI; no roads, sidewalks, or infrastructure were completed in the village.

Despite the fact that CECI recognised that major needs in Nueva Choluteca were related to the lack of infrastructure rather than to the construction of more and more houses (CECI, 2001) the organisation got involved. In partnership with the French NGO "Atlas Logistique" (that built a total of 250 housing units in Choluteca) and based on a self-help program, CECI started the construction of 52 new units. The CECI's program of reconstruction at large (in Honduras and Guatemala) was initially funded by the Canadian International Development Agency (CIDA), the Ministery of Foreign Relations of Quebec (MRI) and religious and private donors. In a second phase, additional funds for $ 110,000 USD and for $ 50,000 USD were given by CIDA and MRI respectively. For the southern region of Honduras, the initial target was to build 800 houses; finally, 990 were built, including the 52 units in Choluteca.

In Choluteca, the rough design of the 6 by 6 m units, without washroom and kitchen and with two 1 by 1 m windows in the façade, demonstrates the lack of care in the details of the project (see Fig. 3.15). Walls are made of reinforced cement blocks and the roof in terra cota tiles (produced with local clay). Having the interior floor level elevated 15 cms from the ground, the houses are supposed to respond to seasonal floods. The costs of materials required to build one house were about $ 2,000 USD (June 2002), the scheme to build them included very little users' decision making. Self-help-induced activities were made by users without knowing which house they were going to be allocated, this in order to mass produce identical units and prevent people from personalising or put more care in the construction of their own dwelling! The result: a complete neighbourhood of identical units.

The later changes and additions made by users proved, three years later, that the units provided were no more than core structures and that, in reality, residents required a space for bathing, a kitchen, a washroom, and in many cases an extra room and a space for an economic activity (see Fig. 3.15). Not only did these additions represent extra costs for residents but also many of

them were made with poor quality materials and without proper construction and hazard-resistant standards.

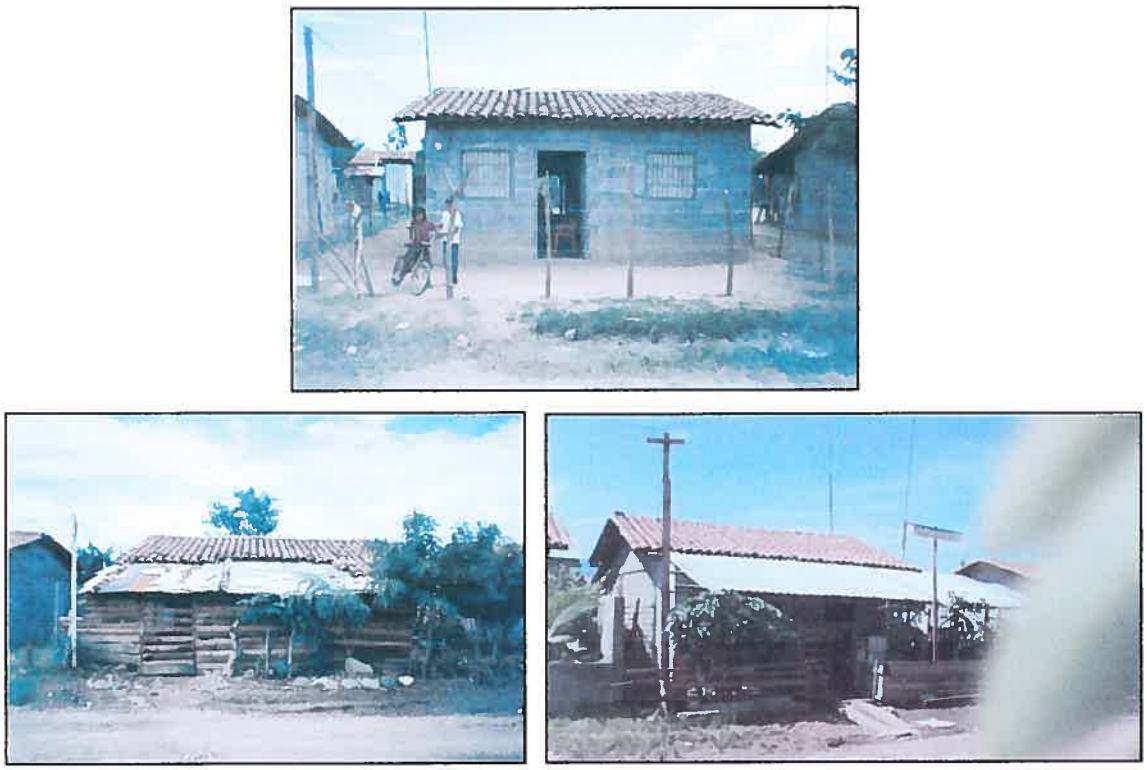


Fig. 3.15 Houses built by the project. **Top:** House as originally constructed. The fence is a later addition that many residents did on their own due to the high levels of insecurity and theft in the village. **Bottom:** later changes and additions made to the units.

Trying to overcome the limitations in infrastructure, other outputs provided by CECI in Nueva Choluteca included the construction of 118 kitchens and 172 latrines (see Fig. 3.16). A program of leadership and "reinforcement of democratic and participative structures" was conducted with a limited budget to which CECI added US$ 7,000. The IOM (International Organisation of Migrations) promised a US$ 10,000 contribution to this initiative; however most of these funds came too late and therefore could not be accepted by CECI. According to a report prepared by CECI, the results of this initiative were mixed. Five meetings and sessions of work were conducted with the residents,

including women and local "leaders" (40% of the population of Nueva Choluteca lives in single-parent female-headed families).

Fig. 3.16 Infrastructure provided by CECI. **Left:** latrine module provided to some units. **Right:** view of the exterior kitchens built.

By 2001, the figures provided by a socio-economic study conducted by FUNDEMUN-USAID showed the results of this collective failure: 4,704 people lived in "Nueva Choluteca", only 42% of the houses were occupied by their owners, the rest were rented, transferred to non-owners (friends and family) or simply not used, 10% of the houses were already in irregular or bad conditions. Out of the population that works (as was said before it is a very low percentage) only 27% produce their income in the settlement (the majority work in agriculture and cattle), elderly and children are forced to have non-paid jobs and a great number of crime groups of young people are reported. Crimes are frequent and the neighbourhood is considered by local residents as dangerous.

Obviously, the negative results of the settlement of Nueva Choluteca as a whole cannot be blamed to CECI alone. In fact, this can be considered as a case in which lack of leadership in between organisations led to an accumulation of collective mistakes. However, the initiative led by CECI can indeed be considered as a project on its own and it is worth evaluating (in the next

chapter); doubtless, many lessons can be learned from this project, particularly regarding the relations between organisations for attaining a common objective.

Chapter III, Results, part 3

3.3. Results obtained by applying the methods to the case studies

This section presents the results obtained by applying the methods presented in Chapter II to the four case studies. These results include (i) the evaluation of the four case studies (using the methods proposed in section 2.2. page 50), and (ii) the representation and description of the organisational system of the four projects (using the methods proposed in section 2.3., page 96). The relations between these two aspects (as proposed in section 2.5, page 107) are part of the discussion and are therefore included in Chapter IV.

As proposed in Chapter II (Methods), the evaluation of the four case studies includes the following activities:

1. Collecting, analysing, and synthesising the information required to complete the Forms of Indicators of Performance (FIPs), and:

2. Completing the FIPs for each project. Sixty two FIPs were completed for each case study using the information gathered in the first activity. All these results, presented in the FIPs, are included in Appendix 3 (volume II).

3. Analysing the Table of Indicators of Performance (TIP) of each project. The TIP presents in a standardised and systematic manner the aspects that need to be assessed for each of the four projects. As they were designed in a MSOffice Excel file system, the TIP of each project is completed automatically when completing its corresponding FIPs. This section therefore includes the analysis of the main aspects of the TIPs.

4. Analysing the unexpected results and impacts for each case study

3.3.1. Results of Case study 1: 2001 earthquake, El Salvador, organisation: FUNDASAL

3.3.1.1. Analysis of the TIP

Refer to Table 3.1 for the evidence upon which the following analysis is based. Table 3.1 also summarises the headings used in the following section.

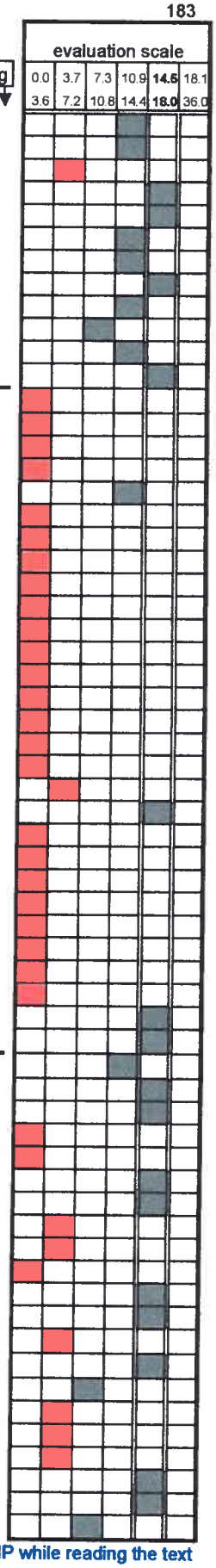
Inputs

Multi-organisation: Despite the fact that the multi-organisation set up by FUNDASAL was well equipped to collect funds (basically due to the positive image of FUNDASAL), the funds collected for the project in La Paz were not enough to obtain high standards of housing construction and infrastructure. Besides, an insufficient level of integration between FUNDASAL and other organisations - that could have developed parallel or supplementary projects in partnership with FUNDASAL – limited the scope of the project. These two weaknesses contrast with an appropriate distribution of responsibilities (that is to say: integration and differentiation) between FUNDASAL, the municipalities, the construction companies, hired labor and the users, an aspect that facilitated the development of construction activities.

The structural flexibility of the organisation permitted creating a unit in the affected area for direct management of the project, also resulting in low administrative costs for the project. By integrating the active participation of the municipalities, FUNDASAL adopted a strategy that permitted sharing various risks of the environment (such as risks associated with the selection of beneficiaries, the acceptability of the program, the responsibility for decision-making, and others). This strategy was appropriate to adapt the multi-organisation to the environment and particularly, to different micro-contexts (the municipalities and their counties) in which located interventions were conducted.

Table 3.1 project: FUNDASAL reconstruction project in El Salvador

section	group	No.	indicator	dif. org
inputs	multi-organisation	1	the capacity to atract funds for the project	14.4
		2	level of integration with the community	13.2
		3	level of integration between organisations	5.8
		4	level of differentiation between organisations	15.8
		5	project's administrative costs	18.0
		6	organisation's capacity to adapt to environm.	14.4
	management tools	7	a census of local residents	12.6
		8	previous studies (typologies, techniques, etc)	15.8
		9	surveys of people's needs	11.5
		10	consultation with the community	7.9
	local resources	11	residents capacity to work in construction	13.7
		12	indigenous materials available	18.0
outputs	financial / funding:	13	tax incentives for companies/ individuals	0.0
		14	loans for housing	0.0
		15	subsidies for housing	0.0
		16	loans for infrastructure or others	0.0
		17	subsidies for infrastructure or others	13.2
	infrastructure	18	dams, barriers, retaining walls	0.0
		19	roads	0.0
		20	water supply	0.0
		21	electricity	0.0
		22	sewage	0.0
		23	telephone	0.0
	community services	24	schools	0.0
		25	health centers	0.0
		26	community centers / religious bldg.	0.0
		27	police / fire station	0.0
	housing	28	new lots	0.0
		29	emergency shelters	0.0
		30	temporary housing	5.7
		31	new houses	14.9
		32	reconstructed houses	0.0
	industry/employm.	33	bldgs/infras. for industry & income generation	0.0
		34	unemployment subsidies	0.0
	others	35	rescue	0.0
		36	psychological aid	0.0
		37	food	0.0
		38	medical aid	0.0
		39	temporary infrastructure	0.0
		40	education and technical assistance	16.2
		41	information	16.2
results	transfer	42	loans given and subsidies allocated	12.6
		43	direct and indirect jobs created	18.0
		44	houses occupied	18.0
		45	insurance policies taken	0.0
		46	emergency protocols implemented	0.0
		47	increment on land ownership	18.0
		48	increment on home ownership	18.0
	community particip.	49	design	5.4
		50	management	5.4
		51	financing of the project	2.4
		52	production components	18.0
		53	construction	18.0
		54	individual responsibility of decision making	6.7
impacts	project goals	55	debt	18.0
		56	environmental impact	9.0
		57	recovery of normal activities	7.2
		58	physical resistance to hazards	6.3
		59	transfer better building practices	7.2
		60	institutional capacity and development	18.0
		61	equality of gender and minorities	15.1
		62	all settlements in safe areas	9.9



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Management tools: The management tools to reduce uncertainty and collect information about the damage, the needs, the expectations and desires of the community (including a census, a survey of people's needs, various technical studies and consultation with the community) permitted FUNDASAL to design and adapt the project to several of the specific requirements of the situation.

Local resources: The availability of both the residents' capacity to work in construction and the required construction materials and equipment made it possible to conduct the self-help component of the project, permitting a significant reduction of costs of construction.

Outputs

Financial / funding: The strategy adopted by FUNDASAL for reconstruction in the region of La Paz was not based on provision of financial aid for housing, infrastructure or for the construction of infrastructure related with income-generation activities. Instead, the organisation opted for the direct provision of housing units, along side which the provision of subsidies for local initiatives (such as the creation of small and medium-size industries) was just a small component of the project. Tax incentives were neither offered at the individual nor at the private companies' level.

Infrastructure: Even though retaining walls were required in land presenting a risk of landslides, and even though rural residents have very little access to regular systems of potable water, sewage, electricity and telephone, the project lead by FUNDASAL did not include the provision or development of any infrastructure. In the last few years, the National government has built main roads to link several municipalities with the capital city San Salvador; however, several secondary roads in rural areas are in bad condition making the access to remote areas (particularly in the rainy season) extremely difficult. Despite this

major need, the project did not include construction of this - or any - type of infrastructure.

Community services: The construction of facilities and infrastructure for the functioning of schools, health centers, community centers, religious buildings, police or fire stations was not included in the project. This is an unfortunate outcome keeping in mind that the analysis of vulnerabilities demonstrates that the level of access of Salvadorian rural residents to this kind of services is lower than in urban centers and therefore the services were required.

Housing: Even though FUNDASAL recognised the existence of multiple rural families living on unsafe land, the project did not include relocation of these families or provision of new lots. As explained in the first part of Chapter three, families living in properties at high risk of landslides or flooding were not included as beneficiaries of the project.

Emergency shelters were not provided; instead, FUNDASAL participated in the governmental initiative of temporary housing, with a sub-standard product that was inappropriate for the needs of the population. Later on, the project did not contemplate the reconstruction of damaged houses, a possibility that could have permitted the recycling of useful components of the affected units. Instead, the backbone of the project was the construction of permanent new houses, an initiative that delivered the final product very late and without sufficient functional quality. As was previously explained, the new units lacked a veranda, interior washrooms and a finished kitchen.

Industry and employment: Even though poverty is one of the main components of vulnerability among the rural residents in El Salvador, the construction of facilities, structures or infrastructures for income-generation activities was not included in the project. Nor were economic compensation or unemployment subsidies accessible to affected residents.

Others: FUNDASAL did not get involved in rescue activities in La Paz; in fact, its participation in La Paz started when the first phase of recovery was finished. Other 'soft' outputs proper to the early stages of recovery such as psychological aid, food, medical aid and, temporary infrastructure were not included in the project. However, education, technical assistance and information became a fundamental output for the development of the self-help component of the project, at the same time that they were crucial for the transfer of knowledge and better practices to local municipalities.

Results

Transfer: The few subsidies that were devoted to motivate the creation of small and medium-size industries were transferred to residents according to the plan designed by FUNDASAL. Regarding employment opportunities, internal evaluations conducted by FUNDASAL show that a great number of jobs were created for local residents specifically to work in construction activities. Besides, construction workers hired by FUNDASAL made a considerable contribution in the process of teaching and supporting residents in self-help activities.

According to the official reports, and comparing this information with the interviews conducted in place, it is possible to say that new housing reached almost 100% occupation. The residents that were targeted by the project used the new units according to the plan of activities designed by FUNDASAL.

Even though official statistics are not available, recent articles and papers about the reconstruction process suggest that the low level of access to insurance of rural housing and the scarce implementation of emergency protocols did not improve after the disaster (Lungo, 2001). Despite the fact that new lots or land were not included as an output in the project, it can be said that the legalisation

of tenure of rural properties had positive results in incrementing the levels of legal ownership of land and housing in the region of La Paz.

Community participation: The beneficiaries of the project had very little participation in the design and management of the project. As was explained before (page 147), all the units were built following the same model, preventing the residents from adapting the proposed units to their particular needs during the original construction of the houses. To benefit from the project, residents had to work as sweat equity and did not have the option of replacing this work with hired labor. Similarly, very little participation was given to residents in the financing of the project, leaving very little space for the creation of alternative ways of financing (such as the creation of cooperatives, application for complementary loans or combination of aid and help from different sources). On the other hand, not only did local residents participate in the assembly of construction components but also in the production of them, including peasants being hired to work in the local industries producing cement blocks. In general, end users had very little responsibility for decision-making; they did not participate in deciding where or how the funds were going to be allocated, or how the financing strategy was going to be conducted.

Impacts

Project goals: Considering that neither the national nor the municipal governments obtained loans for reconstruction, there is no additional burden of debt resulting from post-disaster reconstruction activities.

The most important negative impact of the project on the natural environment was associated with the pollution of natural sources of water due to the lack of any sewage infrastructure. Furthermore, the recovery of normal activities in La Paz was delayed due to the late provision of permanent housing solutions. Even though the structural (anti-seismic) resistance of the housing structures was

guaranteed by the building process, the low quality of construction of the units leads one to believe that, in the long-term, the resistance of future additions might be compromised by the prevailing low quality of construction. At the same time, the subsequent use of temporary shacks built with 'rough' materials and very low standards of safety (and used even after the permanent units were finished) constitutes additional physical vulnerabilities in the case of future natural hazards. Later additions to the original units are not commonly compliant with construction codes and standards (which, by the way, are not properly controlled by the authorities in the rural areas).

One of the most positive impacts of the project was the improvements gained in institutional capacity and development at the level of the municipalities, obtained from the close work between FUNDASAL and the officers of the local governments. By including the participation of local authorities, FUNDASAL made them take initiatives and make decisions about the project. This approach permitted that, even though the temporary multi-organisation responsible for the project was dissolved when the project was finished, some of the individual organisations that constituted the project team did not disappear, and therefore, they can potentially give continuity to the lessons learned from the project.

Except for the exclusion of residents living in unsafe locations, the project had a fair system for selecting the beneficiaries, giving the same opportunities to men and women and people with different racial, economic, religious and ownership conditions. This approach permitted that both renters and peasants, who might not have had official documents to prove land tenure, were included as beneficiaries of the project. However, the fact that residents living in land at high risk of flooding or landslides were not included as beneficiaries means that physical vulnerabilities related with unsafe locations were not totally reduced. These vulnerabilities, coupled with the physical vulnerabilities resulting from later additions and changes to the housing structures, suggest that a similar disaster can still happen in the same region if a new natural hazard occurs.

3.3.1.2. Analysing unexpected results and impacts

In section 2.2.3.4 a list of seven assumptions were first presented as a guide to the identification of the most frequent (or most likely to occur) cause-effect relationships in projects offering a product in the context of development-oriented objectives. By applying these assumptions to the evaluation of the project lead by FUNDASAL, the following unexpected results and unexpected impacts were identified:

Assumption No. 1: if: (i) users have access to the product (if the product is affordable, accessible, etc) and (ii) the users 'like' it (if the product corresponds to the needs, desires and expectations of the users), then: the output is acquired: The assumption was *true*.

Assumption No. 2: if the product is acquired and its use corresponds to the needs, desires and expectations of the users, then: the product is used. The assumption was *true*.

Assumption No. 3: if: (i) end-users are shown that resources do not allow for paying labour force; (ii) end-users are taught how to participate in the activities of the project; (iii) end-users have the time (or can manage to get the time) to participate in the project; (iv) end-users are given the resources (tools and materials) to participate; and (v) end-users are shown that the product is not given 'for free' but instead it can be 'paid' for by helping in its production, then: they will participate in producing the product. The assumption was *true*.

Assumption No. 4: if: people use the products (using as opposed to just acquiring the product which is not enough), then: the goal is attained. Two unexpected outcomes prove that this assumption was *false:* first, the negative impacts in the environment related to the pollution of sources of water and

second, the permanence of the temporary sub-standard units after the permanent houses were built. In both cases, the use of housing units was not enough to reduce the vulnerabilities of the population and to lead to sustainable development.

Assumption No. 5: if: people participate in producing the product, then: the goal is attained: Contrary to the assumption established by FUNDASAL (as a rationale for the implementation of a self-help-based project), the participation of local residents in construction activities did not conduct, in the case of the project in La Paz, to the implementation of better building practices in later additions made to the original units. This aspect reduced the effects of the project in terms of the potential for reduction of physical vulnerabilities. The assumption was *false*.

Assumption No. 6: if: no sudden and/or unexpected changes occur in the environment, then: the expected results and expected impacts occur. The assumption was *true*.

Assumption No. 7: if: a certain expected change occurs in the environment, then: the expected results and expected impacts occur. The assumption was *true*.

3.3.1.3. Representation and description of the organisational system

As explained in Chapter II (Methods), two levels of organisational systems are analysed. First, at the level of the organisation responsible of the project, and then at the level of the multi-organisation formed to conduct the project.

3.3.1.3.1. Organisational system of FUNDASAL

To conduct the reconstruction project in the rural region of La Paz, FUNDASAL opted for a project-based organisation (as described in section 2.3, page 96). This structure included a project manager, directly responsible for the project, located on the site, and in charge of conducting the activities and organising the community directors (see Fig. 3.17). Each community director was in charge of a specific intervention (a Municipality or a specific community) and directed the activities of the different teams of aided self-help, which conducted the construction activities.

Both the design and financing of the project (including the design of the units) were supported by regular functional units located in San Salvador (at the headquarters).

3.3.1.3.2. Organisational system of the multi-organisation

The organisation established for the reconstruction project in La Paz included the National Government at two instances: (i) one just after the disaster, in which FUNDASAL and the Government joined forces for the development of temporary housing (as part of the National program of temporary housing); and (ii) one before the disaster in which the National Government established cooperation agreements with the German Government that led to the funding of the permanent housing project. It is possible to say then, that the National Government was part of the multi-organisation for the development of temporary housing and was an external organisation (outside the multi-organisation) with an important influence in the development of the permanent housing project. In Fig. 3.18 (that summarises the organisational structure of the whole project), it is represented as an influential organisation outside the multi-organisation (therefore in a clear box).

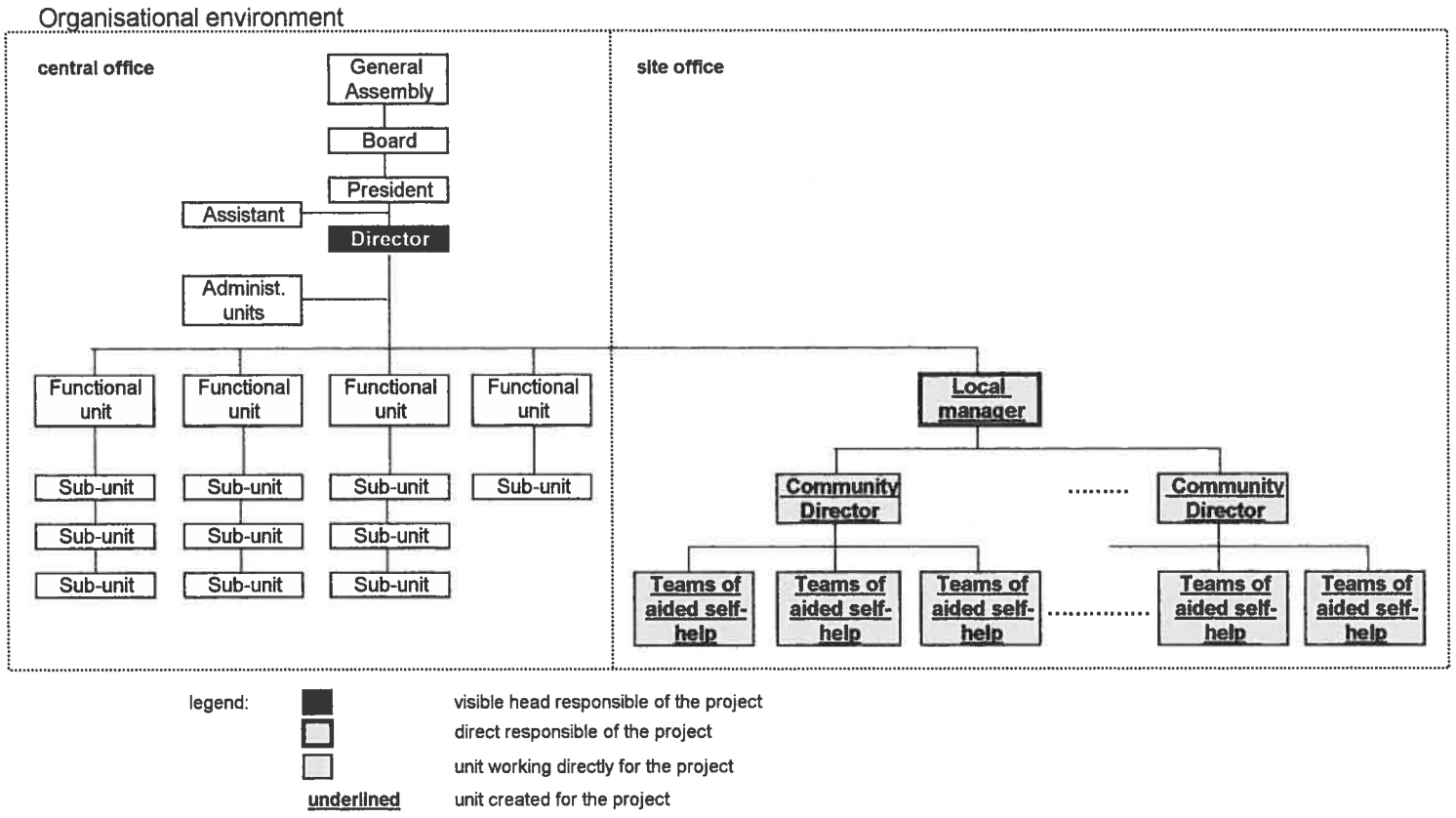


Fig. 3.17 FUNDASAL Internal Organisational design

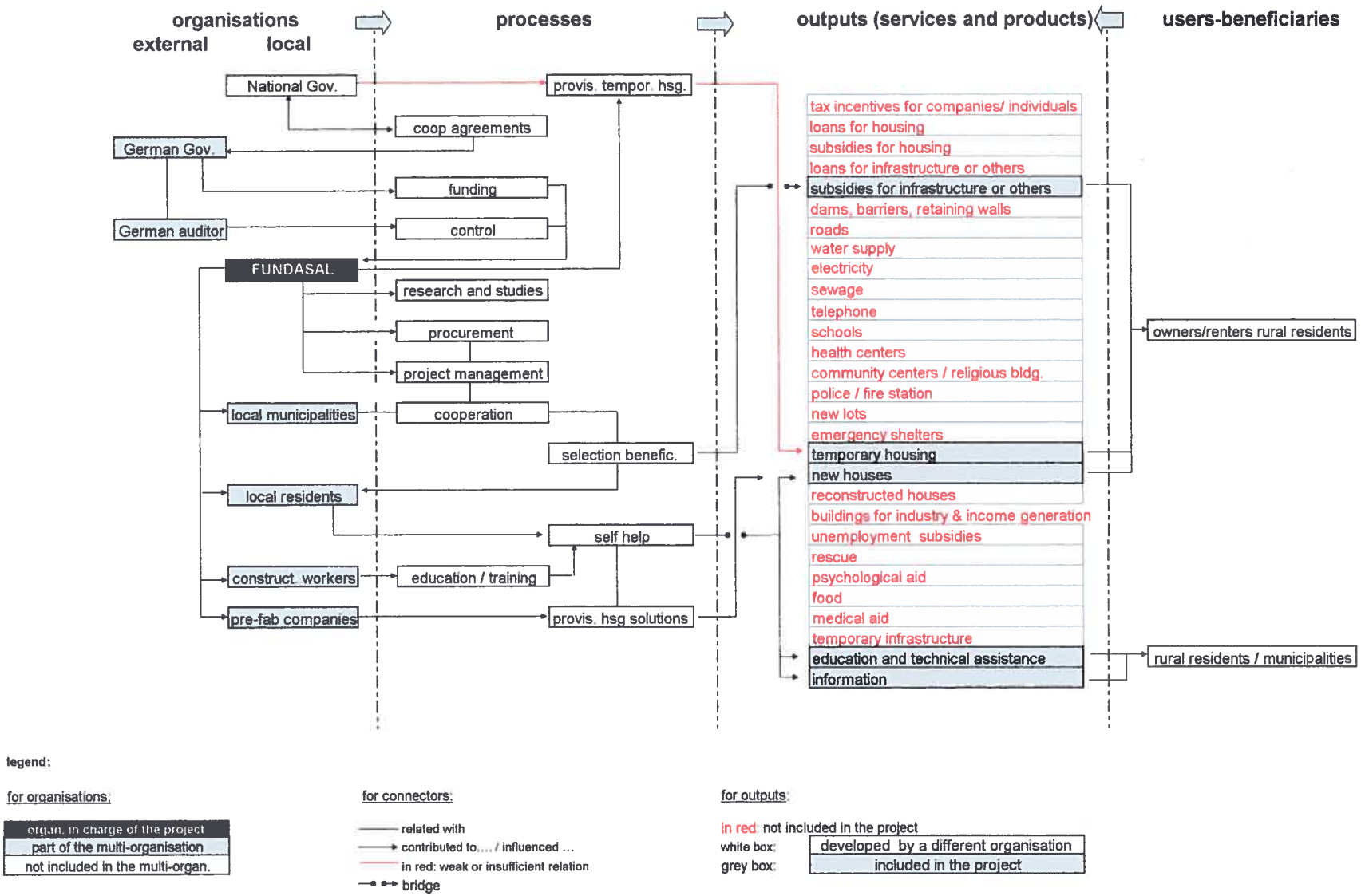


Fig. 3.18 Diagram of the multi-organisation applied to FUNDASAL's reconstruction project

Other important participants within the multi-organisation included the German Government (and its audit body in El Salvador), the local municipalities, the local residents, the construction workers hired by FUNDASAL for education and training activities, and the companies selected by FUNDASAL for building the mobile (permanent) pre-fab units.

The diagram also shows the activities that were conducted. From the activities identified in the WBS of reconstruction projects (section 2.3.) the ones implemented in FUNDASAL's project are checked in the following list:

X Cooperation agreements
X Funding
X Procurement
X Research & studies
Distribution of money
X Selection of beneficiaries
X Project management
X Control
X Cooperation
X Provision of: land / housing solutions / temporary housing*
Decision making
X Educating and training
X Self-help
Construction

* Within the activity called "provision of:..." the group of outputs that were included in the project are underlined in this list

Figure 3.18 also shows that the following outputs were offered to rural residents (owners and renters): (i) subsidies for infrastructure and others; (ii) temporary housing; (iii) new houses; (iv) education and technical assistance; and (v)

information. Finally, it is important to note that only owners and renters in the rural areas benefited from the project. Municipalities benefited from the education and training portion of the project.

3.3.2. Results of Case study 2: 2001 earthquake, San Salvador, organisation: Municipality of San Salvador (MSS)

3.3.2.1. Analysis of the TIP

Refer to Table 3.2 for the evidence upon which the following analysis is based. Table 3.2 also summarises the headings used in the following section.

Inputs

Multi-organisation: The multi-organisation set up by the MSS was unable to collect funds for the project, neither at the domestic nor at an international level. In order to achieve the budget originally estimated, the Municipality considered the possibility of obtaining private or public loans and subsidies; however, very little success was obtained from this effort and the activities of fund raising were soon abandoned. The organisational approach assumed by the MSS involved the participation of very few external organisations using an approach in which the Municipality assumed most of the activities of the project planning, design and execution. Even though this aspect gave a relative independence to the activities of the Municipality, the municipal government turned out to be incapable of obtaining alone the resources required to deal with a complete set of outputs.

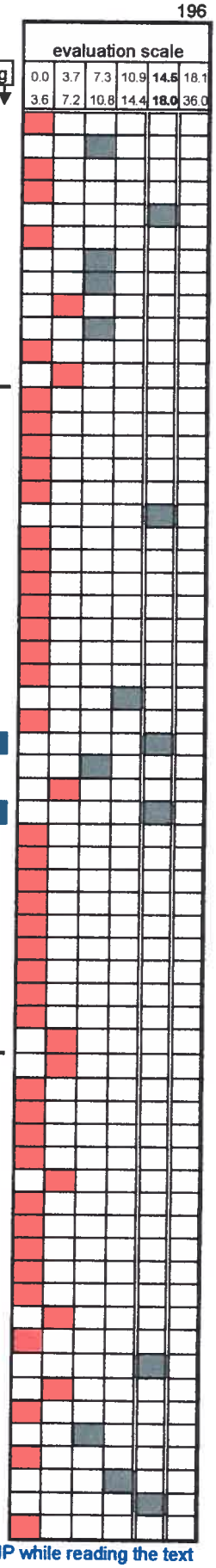
The MSS created a Working Team that included representatives of the local community (academics, politicians, experts, etc); this participation plus the fact that the MSS had previously worked in direct contact with the community were

Table 3.2 project: reconstruction project Municipality of San Salvador

section	group	No.	indicator	dif. org
inputs	multi-organisation	1	the capacity to atract funds for the project	0.0
		2	level of integration with the community	9.6
		3	level of integration between organisations	0.0
		4	level of differentiation between organisations	1.4
		5	project's administrative costs	15.3
		6	organisation's capacity to adapt to environm.	2.4
	management tools	7	a census of local residents	8.1
		8	previous studies (typologies, techniques, etc)	9.4
		9	surveys of people's needs	4.3
		10	consultation with the community	10.1
	local resources	11	residents capacity to work in construction	2.9
		12	indigenous materials available	6.5
outputs	financial / funding:	13	tax incentives for companies/ individuals	0.0
		14	loans for housing	1.2
		15	subsidies for housing	2.4
		16	loans for infrastructure or others	0.0
		17	subsidies for infrastructure or others	0.0
	infrastructure	18	dams, barriers, retaining walls	14.9
		19	roads	0.0
		20	water supply	0.0
		21	electricity	0.0
		22	sewage	0.0
		23	telephone	0.0
	community services	24	schools	0.0
		25	health centers	0.0
		26	community centers / religious bldg.	12.3
		27	police / fire station	0.0
	housing	28	new lots	18.0
		29	emergency shelters	9.8
		30	temporary housing	6.2
		31	new houses	18.0
		32	reconstructed houses	0.0
	industry/employm.	33	bldgs/infras. for industry & income generation	0.0
		34	unemployment subsidies	0.0
	others	35	rescue	0.0
		36	psychological aid	0.0
		37	food	0.0
		38	medical aid	0.0
		39	temporary infrastructure	0.0
		40	education and technical assistance	0.0
		41	information	6.0
results	transfer	42	loans given and subsidies allocated	6.3
		43	direct and indirect jobs created	0.0
		44	houses occupied	0.0
		45	insurance policies taken	0.0
		46	emergency protocols implemented	3.6
		47	increment on land ownership	7.2
		48	increment on home ownership	0.0
	community particip.	49	design	0.0
		50	management	0.0
		51	financing of the project	0.0
		52	production components	0.0
		53	construction	7.2
		54	individual responsibility of decision making	0.0
impacts	project goals	55	debt	18.0
		56	environmental impact	6.8
		57	recovery of normal activities	0.0
		58	physical resistance to hazards	9.0
		59	transfer better building practices	0.0
		60	institutional capacity and development	12.2
		61	equality of gender and minorities	16.2
		62	all settlements in safe areas	0.0

evaluation scale

0.0	3.7	7.3	10.9	**14.5**	18.1
3.6	7.2	10.8	14.4	**18.0**	36.0



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expected to have created the proper environment for understanding the local problems and needs.

However, the scarce involvement of other partners and other institutions was reflected in a very low level of integration and differentiation of responsibilities. Besides, when difficulties related with obtaining funds appeared, the multi-organisational structure of the project proved to be insufficient to adapt the project to the constraints of the environment (such as the political polarisation between parties). On the other hand, the use of "in house" personnel and volunteers in the Working Team had a positive effect as it reduced the operational and administrative costs of the project. In summary, it can be said that the structure and the strategy adopted for this project centralised most of the risks (financial, technical and managerial ones) in only one institution, the Municipality.

Management tools: The Municipality conducted most of the frequently used management tools for the collection of information and knowledge about local conditions; these tools included a census of victims, studies of local techniques, a survey of needs and consultation with the community. However, these activities are over-shadowed by the absence of a systematic application of this knowledge to the outputs of the project. For example, despite of the expected diversity of users' needs and expectations, a unique model of housing unit was designed by the consultants of the Working Team (see appendix 2).

Local resources: the project did not reach the stage of housing construction because of the little success of the activities of fund-raising. However, observation of the precarious conditions of the spontaneous construction of pre- and post-disaster housing in San Salvador reveals that low income families (particularly squatters) encounter the typical difficulties found in many other Latin American cities in housing construction; namely: (i) low income urban residents have little knowledge about appropriate construction practices (or they do not

have the means to apply those practices); (ii) in the cities they do not have enough access to indigenous materials (contrary to the country side, where wood, earth, water, sand, etc. are easily found), and (iii) tools and construction equipment are not easily accessible for the appropriate construction of spontaneous housing.

Outputs

Financial / funding: Loans and subsidies for housing were offered exclusively to a small group of residents that corresponded to employees of the Municipality itself. The limited scope of this output contributed very little to the overall recovery of the housing situation in the city.

Infrastructure: The construction and repair of barriers and retaining walls were included as outputs of the project reaching most of the objectives determined by the MSS in terms of budget, schedule, quality and scope. However, the construction and repair of urban roads were not included in the project. Similarly, even though access to public services does not exist for many of the squatter settlements of the city (and despite the effects of the disaster on the existing infrastructure) neither the construction of new infrastructure nor the reconstruction of the affected systems for water supply, electricity, sewage and telephone were included in the project.

Community services: The construction of facilities and infrastructure for the functioning of schools, health centers, community centers, police or fire stations was not part of the outputs of the project. However, public community centers affected by the earthquake were repaired and some reconstructed by the MSS using in-house resources and fulfilling most of the objectives targeted in the design of the project.

Housing: A program of emergency shelters was initiated by the MSS soon after the disaster. The project included the construction and later dismantling of large tents that were used as communal emergency housing. However, officers of the MSS recognise that lack of privacy and lack of services characterised these emergency shelters. More than 600 families of San Salvador benefited from the program of temporary housing and relocation started by the national government in the region of Tonocatepeque. However, the units were provided late and the relocation project resulted in a major failure characterised by social problems, high levels of crime, lack of employment opportunities, lack of infrastructure and lack of community services.

In fact, the outputs concerning housing did not succeed as the project of new housing and housing reconstruction was abandoned before reaching the stage of construction.

Industry and employment: As explained in the second part of Chapter III, one of the major components of urban vulnerability in San Salvador is associated with lack of access to legal and formal jobs. However, neither the construction of facilities, structures or infrastructures for income-generation activities nor the provision of economic compensation or unemployment subsidies were accessible to residents of San Salvador as a result of the project led by the MSS.

Others: Soft outputs such as rescue, psychological aid, food, medical aid, temporary infrastructure, education and technical assistance did not form part of the project. Doubtless, the opportunity to combine hard and soft outputs in order to provide a holistic response to the needs of the urban population was missed.

Results

Transfer: The few subsidies and loans that were implemented to help the employees of the Municipality were distributed late and without reaching the amount expected to be distributed according to the original plan. Besides, the creation of direct or indirect employment opportunities was not an important component of the project. In fact, the Municipality has not kept track of the jobs and opportunities created by the activities of the project. Obviously, the abandonment of the project resulted in no occupation of housing units. Similarly, the lack of a proper program of insurances and the non construction of the housing project suggest that the access to insurance policies did not increase due to the outputs of the project. Plans of risk mapping and risk management implemented after the disaster in some units of the Municipality (such as the urban planning unit) might be considered as the basis for the implementation of emergency protocols.

It can be expected that the 600 families that were relocated in Tonocatepeque (as part of the National project from which residents of San Salvador benefited) increased the level of land ownership. However, land ownership did not increase due to projects directly lead by the MSS; similarly, the failure of the housing component of the project did not permit the increase of home ownership.

Community participation: beneficiaries of the project did not have direct participation in the design, management, financing and production of components for the project. However, some type of indirect community participation might be said to be associated to the short-term results of the project. First, the participation of specialists, academics and practitioners in the Working Team established by the Municipality, and second, through the participation of the residents of San Salvador in the parallel program of relocation in Tonocatepeque. In this parallel program of emergency housing and relocation, residents were required to work in the construction of the emergency units using the materials given by the government. As it has been mentioned before, this parallel program lead by the National Government is not part of the

project of the MSS; however, it included beneficiaries from San Salvador as a remedial solution to compensate in part for the lack of a successful project at the level of the local authorities. In the design of the MSS's permanent housing project, end users were expected to have very little responsibility for decision-making; in fact, a traditional program of self-help (concentrated in the provision of labour) was prepared including a unique model of house that was planned to be built (not even the prototype unit was built).

Impacts

Project goals: Considering that the municipal government did not obtain loans or credit for the reconstruction project, there is no additional burden of debt resulting from post-disaster reconstruction activities. Similarly, the non construction of housing and infrastructure did not permit negative effects in urban sprawl. However, negative impacts of the failure of the project on the natural environment include the pollution of natural sources of water due to the lack of any sewage infrastructure in the urban slums which were in no way improved upon. The project did not contribute to the organisation and consolidation of informal settlements nor to the improvement of conditions of life of squatters. The project was insufficient to reduce the effects of the disaster on the environment, including the potential for reducing the effects on public health, on the pollution of rivers and sources of water, and on the degradation of the physical conditions of the urban slums.

The failure of the housing component of the project suggests that minimum effects on the recovery of normal activities – particularly among low-income families - were obtained in San Salvador. For the same reason, the physical resistance to hazards in low-income housing structures is not expected to have increased. Furthermore, the failure of the permanent housing project (including its self-help initiative) did not permit the transfer of better building practices. These negative outcomes contrast with the repair of infrastructure (barriers and

retaining walls) and public buildings, which is expected to have contributed to the physical resistance of these facilities and therefore to the reduction of vulnerabilities.

Awareness about existing risks and the importance of risk assessment among the officers of the Municipality led to the development of a program of risk mapping and risk management. A certain level of institutional development and increase of institutional capacity can therefore be expected after the experience of the MSS. Considering race, gender, and social characteristics, a fair selection of beneficiaries was established by the MSS and the Working Team in order to accomplish the few outputs that were produced. However, considering the character of the Municipality as a public institution, the collection and distribution of economic resources to help the employees of the Municipality that were affected by the disaster might be perceived as a biased delivery of help.

The ultimate impact of reducing local vulnerabilities by reducing the settlements in unsafe areas was not obtained by the project. In fact, the condition and number of informal settlements and slums in San Salvador is not expected to have improved due to the project lead by the MSS.

3.3.2.2. Analysing unexpected results and impacts

Refer to section 2.2.3.4. or to section 3.3.1.2 for the description of the seven assumptions that correspond to the most frequent (or most likely to happen) cause-effect relationships in projects leading to offer a product in the context of development-oriented objectives.

The assumptions proposed for the analysis of the other three case studies do not apply to the housing project lead by the MSS because of the very fact that most of the expected outputs were never accomplished. Note that the assumptions that were prepared relate outputs to results and results to impacts.

In fact, a different type of assumptions seems to have been contradicted by the facts which occurred in the early stages of the project, particularly the ones that could have been established by the Municipality with regard to obtaining the resources. The importance of the strategic plan required to obtain funding seems, indeed, to have been underestimated by the municipal officers. At the same time, the effects of the political environment in which the project had to be developed seem to have been insufficiently considered or mitigated. In both cases, the assumptions established by the MSS encountered difficulties in the project which finally led to the failure of the housing component.

3.3.2.3. Representation and description of the organisational system

3.3.2.3.1. Organisational system of the MSS

To conduct the reconstruction project in the urban area of San Salvador, the Municipality opted for the use of in-house resources. This approach aimed to take advantage of the existing functional units of the organisation and to reinforce the existing resources through the consolidation of a Working Team mandated for the design and execution of the project. In this regard, the organisational design assumed a project-based structure (as proposed in section 2.3). However, this structure did not have the leadership of a single project manager directly responsible for the project; instead it aimed to create a consensus among a series of specialists and professionals. This innovative structure implied that the Working Team acted as an external consultant but received at the same time the responsibility for executing the project (see Fig. 3.19). Both the design and financing of the project (including the design of the units) was directed by the in-house resources and in coordination with the Working Team. The permanent administrative units of the Municipality that were employed in the project remained after the project was abandoned, and thus a certain level of continuity and organisational learning can be expected. However,

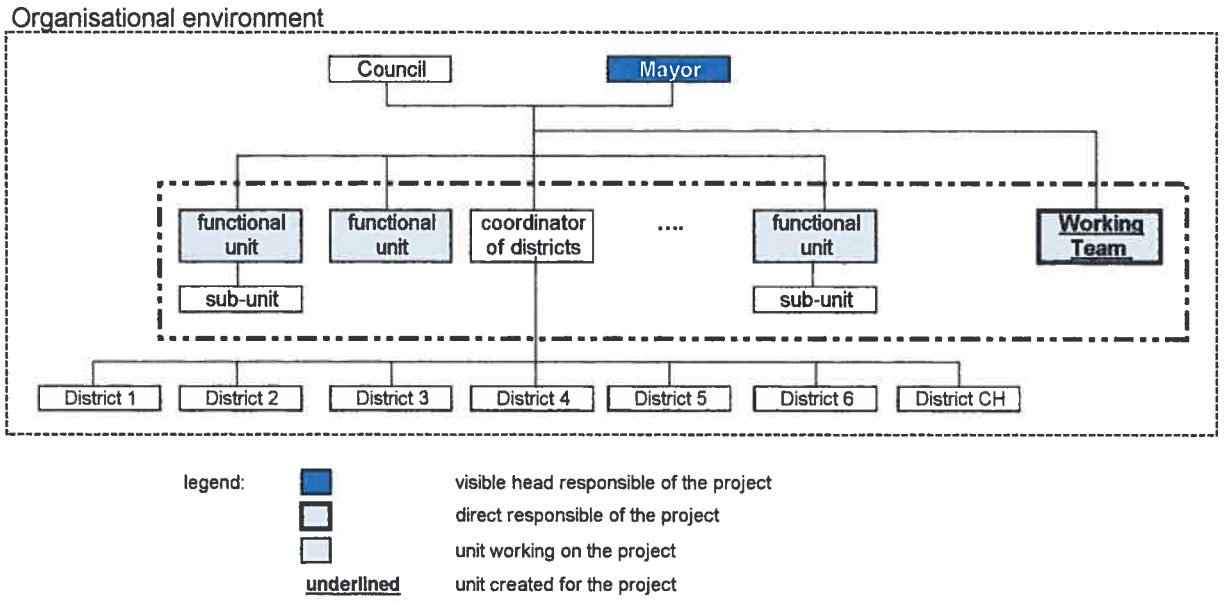
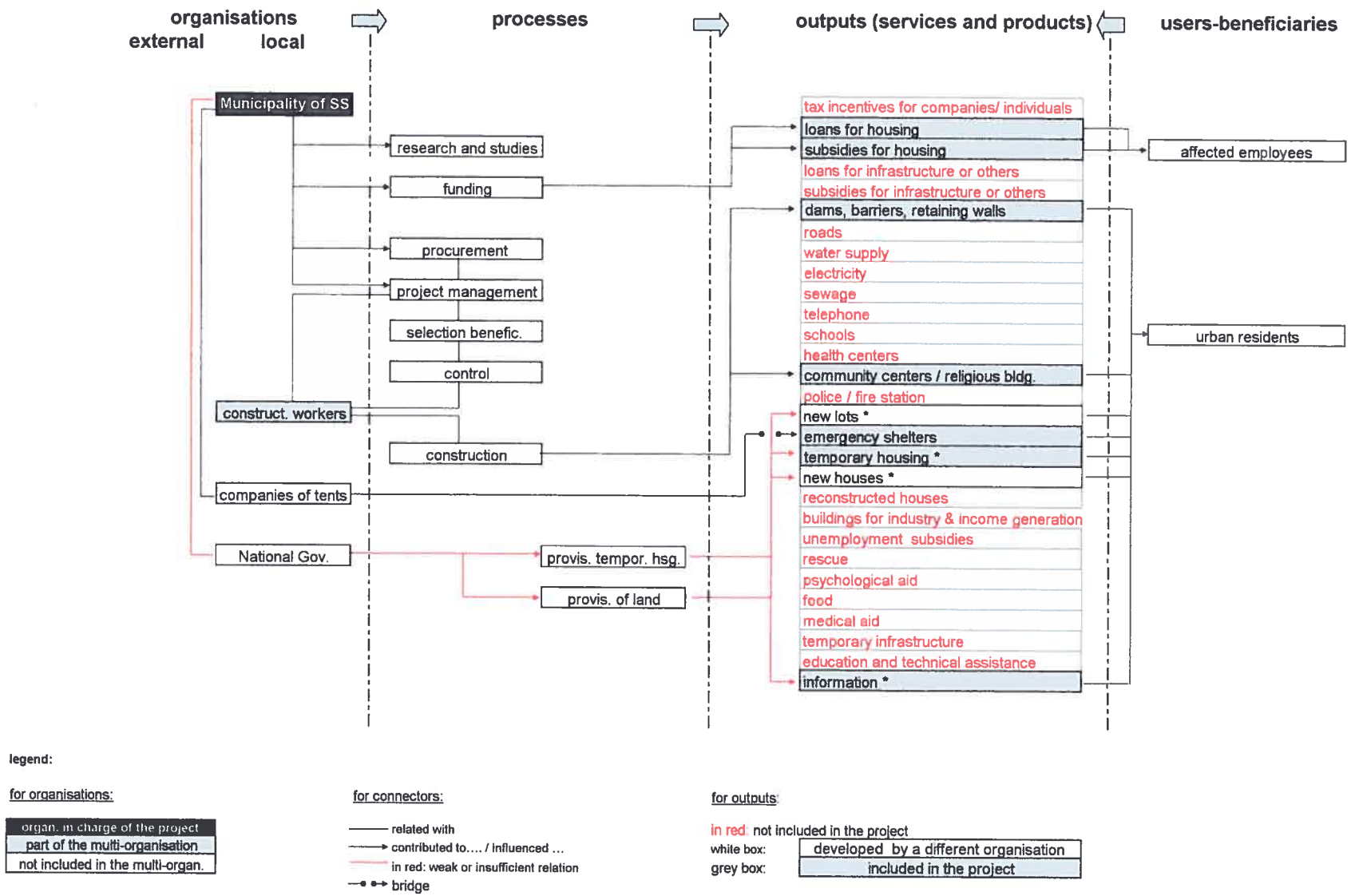


Fig. 3.19 Municipality of San Salvador Internal Organisational design



* These outputs correspond to the National Government's parallel project of resettlement in Tonocatepeque

Fig. 3.20 Diagram of the multi-organisation applied to the MSS's reconstruction project

the Working Team was dissolved at the end of the project without leaving a systematic report of the lessons learned or the difficulties and opportunities encountered.

3.3.2.3.2. Organisational system of the multi-organisation

The character of management independence assumed by the MSS for the reconstruction of the city is also perceived at the level of the project's multi-organisation. Fig. 3.20 (that summarises the organisational structure of the whole project) shows that very few participants were brought together by the Municipality. As a complement to the intentions of the local administration, the National Government established the parallel project of relocation which, as shown in the diagram, included the delivery of temporary housing and new lots. In order to illustrate the insufficient relations existing between the local and national administrations, a red arrow links the MSS and the National Government. Construction workers and contractors were hired by the Municipality to conduct the works of infrastructure (retaining walls and cleaning of water channels) and for the repair of public buildings.

The diagram shows the activities that were conducted in the project. From the activities identified in the WBS of reconstruction projects (section 2.3) the ones implemented in the project lead by the MSS or by the parallel program of relocation lead by the National Government are checked in the following list:

- [ ] Cooperation agreements
- [X] Funding
- [X] Procurement
- [X] Research & studies
- [ ] Distribution of money
- [X] Selection of beneficiaries
- [X] Project management

X Control

Cooperation

X Provision of land / housing solutions / temporary housing*

Decision making

Educating and training

Self-help

X Construction

* Within the activity called "provision of:..." the group of outputs that were included in the project are underlined in this list

The following outputs of the MSS's project were offered to urban residents of San Salvador: (i) barriers, retaining walls (ii) repair of community centres and public facilities (iii) emergency shelters (in the form of communal tents). For employees of the Municipality the following outputs were offered: (i) loans and (ii) subsidies for housing. From the parallel program of relocation conducted by the National Government, urban citizens of San Salvador benefited from (i) new lots and (ii) materials for temporary housing.

3.3.3. Results of Case study 3: 1999 earthquake, Colombia, organisation: Coffee Growers' Organisations (CGOs)

3.3.3.1. Analysis of the TIP

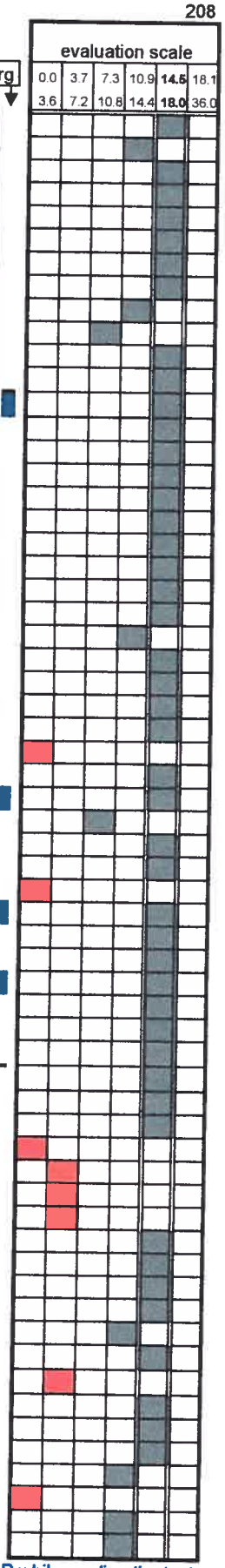
Refer to Table 3.3 for the evidence upon which the following analysis is based. Table 3.3 also summarises the headings used in the following section.

Inputs

Multi-organisation: The multi-organisation set up by the CGOs took advantage of their local and external relations in order to attract resources for the project.

Table 3.3 project: 1999 CGO's rural reconstruction project in Colombia

section	group	No.	indicator	dif. org
inputs	multi-organisation	1	the capacity to atract funds for the project	18.0
		2	level of integration with the community	13.2
		3	level of integration between organisations	18.0
		4	level of differentiation between organisations	18.0
		5	project's administrative costs	18.0
		6	organisation's capacity to adapt to environm.	16.2
	management tools	7	a census of local residents	15.3
		8	previous studies (typologies, techniques, etc)	18.0
		9	surveys of people's needs	13.7
		10	consultation with the community	7.9
	local resources	11	residents capacity to work in construction	15.8
		12	indigenous materials available	15.8
outputs	financial / funding:	13	tax incentives for companies/ individuals	18.0
		14	loans for housing	18.0
		15	subsidies for housing	18.0
		16	loans for infrastructure or others	18.0
		17	subsidies for infrastructure or others	18.0
	infrastructure	18	dams, barriers, retaining walls	15.4
		19	roads	16.5
		20	water supply	18.0
		21	electricity	15.4
		22	sewage	18.0
		23	telephone	11.4
	community services	24	schools	16.5
		25	health centers	16.5
		26	community centers / religious bldg.	16.5
		27	police / fire station	15.4
	housing	28	new lots	0.0
		29	emergency shelters	15.4
		30	temporary housing	18.0
		31	new houses	9.3
		32	reconstructed houses	18.0
	industry/employm.	33	bldgs/infras. for industry & income generation	18.0
		34	unemployment subsidies	0.0
	others	35	rescue	18.0
		36	psychological aid	15.0
		37	food	15.0
		38	medical aid	18.0
		39	temporary infrastructure	18.0
		40	education and technical assistance	18.0
		41	information	18.0
results	transfer	42	loans given and subsidies allocated	18.0
		43	direct and indirect jobs created	15.3
		44	houses occupied	18.0
		45	insurance policies taken	0.0
		46	emergency protocols implemented	7.2
		47	increment on land ownership	7.2
		48	increment on home ownership	7.2
	community particip.	49	design	18.0
		50	management	18.0
		51	financing of the project	16.2
		52	production components	18.0
		53	construction	13.5
		54	individual responsibility of decision making	18.0
impacts	project goals	55	debt	7.2
		56	environmental impact	16.7
		57	recovery of normal activities	18.0
		58	physical resistance to hazards	18.0
		59	transfer better building practices	12.6
		60	institutional capacity and development	2.9
		61	equality of gender and minorities	12.6
		62	all settlements in safe areas	12.6



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This capacity to collect funds permitted a continuous and timely investment of resources according to the objectives of the project and according to a complete set of outputs determined in the design of the reconstruction plan. The CGO's network of regional and local institutions permitted direct and constant contact with organisations and members of the community. However, local municipalities were not directly involved in the project, leaving little possibility of knowledge transfer and institution building at the level of the local authorities.

The structure set up by the CGOs included the participation of various local and external participants which represented the additional challenge of obtaining an appropriate level of integration and differentiation among them. A clear distribution of roles accompanied by cooperation among the participants to the delivery of common objectives was obtained under the leadership of the Coffee Growers' Federation. This leadership not only permitted the distribution of responsibilities among the various levels of the network of the Coffee Growers' Organisations but also among external organisations and partners.

Clear and simplified methods for collecting, managing and transferring information permitted a small group of specialists (mostly engineers) to manage and control the execution of the construction activities. With this strategy, and with the use of regular (permanent) in-house resources, administrative costs were kept to the minimum. This approach implied that permanent administrative units at various levels of the organisation were employed for a period of time to manage the project (taking advantage that it was the slack season for coffee) and thus very few new employees were hired for the project.

The multi-organisation's capacity to adapt to the environment was based on a plan of risk mitigation in which several of the financial, technical and logistical risks were shared among various organisations, and more importantly among the end-users. Within this strategy, financial institutions were involved to manage the collection, distribution and transferring of money. Construction

companies and pre-fab industries were called-up to participate and some were selected (by bidding) in order to share the financial and technical risks associated with developing and marketing new construction systems. Public service companies were also technically and economically supported by the CGOs in order to obtain from them efficient repair of the infrastructure. The use of the regional and local network of participants can also be considered as a strategy to adapt the project to the specific conditions of the environment. With this approach, officers who are used to working in the local conditions executed the main activities of the project. Finally, end users were required to assume responsibility for their own reconstruction projects transferring to them the financial and organisational risks of each of their individual initiatives.

Another strategy to adapt the project to sudden changes and other risks of the environment was to establish in parallel different planned outputs and solutions (if plan 'A' failed a plan 'B' was ready to be used). With this approach, the self-help component of the project was complemented by the pre-fab housing initiative, subsidies and loans were delivered in parallel, information and education was transmitted by various means (brochures, newspapers, magazines) and parallel programs of infrastructure and community services were conducted simultaneously.

Management tools: In order to respond to the needs and expectations of affected residents, the CGOs established the management tools required for the collection and processing of information and knowledge. These activities included conducting a census of affected residents, studies about architectural typologies and techniques, a survey of people's needs and consultation with members and representatives of the community (through the local Coffee Growers' Committees). By using these tools, the information about affected land/home owners and tenants was collected and used for the design of the outputs. However, residents living in illegal conditions in the rural areas were not

included and their situation was not reported. Since the early stages of the reconstruction activities this group was excluded from the project.

Local resources: Local rural residents met the conditions required to participate in construction activities. Even though their construction practices were not optimum before the disaster (in terms of the use of disaster resistant construction standards), affected peasants traditionally have the time, interest and physical capacity to solve their housing deficit by building for themselves. With the outputs offered by the project, they received the proper guidance to improve their traditional construction practices in order to meet disaster-resistant norms.

The character of a rural area permitted the residents of the region to have relatively easy access to construction materials such as wood, earth, water and sand. Residents combined concrete structures with brick and the traditional construction technologies based on the use of bamboo (guadua). Traditionally, peasants are used to building using these materials in the construction of bahareque walls, clay tiles, timber structures and even for the construction of furniture and other structures. However, the wide-spread use of bamboo threatened the environmental conditions of the region after the disaster. Therefore, the efficient and rational use of this material had to be monitored and supervised by the CGOs' auditors in order to prevent dangerous effects on the environment.

Outputs

Financial / funding: The national government established tax reductions, tax waivers and fiscal incentives for both individuals and companies. These incentives aimed to facilitate the creation of employment, to attract the participation of the private sector and exterior companies and to mitigate the economic losses in the region.

As explained in the first section of this chapter, the backbone of the housing component of the rural reconstruction was based on a plan of loans and subsidies targeted not only to the reconstruction of housing units but also to the reconstruction and repair of coffee processing infrastructure. With this approach, beneficiaries received enough resources to proceed with their own individual and customised projects using a great variety of solutions and easily permitting them to adapt the projects to a case-by-case reconstruction situation. Loans and subsidies were given to the beneficiaries that needed them, within the objectives of the project and according to the time table established by the CGOs.

Infrastructure: Barriers and retaining walls were built to control and prevent landslides. Even though the total need of retaining walls could not be met by the project, a significant contribution to reduce the physical vulnerability associated with landslides on roads and private land was accomplished.

Similarly, many of the rural roads were repaired or reconstructed and many others (but not yet all of them) that were not properly finished before the disaster were paved as part of the project. Beneficiaries of loans and subsidies could also use the available resources to build roads inside the limits of their own land and to build the necessary infrastructure of public services (connection to sources of water, to the water mains, to the sewage systems and to the electricity and telephone networks). Observation of the local conditions and the statistics of the national government suggest that an appropriate level of coverage in public services exists in the region, telephone system being the one that is less accessible to rural residents.

Community services: A specific sub-project with its own funding (called FORECAFE 3) was established in partnership between the National Government, FOREC and the CGOs in order to build public facilities such as schools, health centers, churches and police stations. These outputs were

delivered according to the objectives initially determined and the budget and time-tables originally established.

Housing: New lots were not offered as part of the project. This aspect reflected the fact that the project was targeted directly to land owners and only indirectly to land renters. In the housing project, peasants who did not have legal documents of land ownership could legalise their tenure after demonstrating long-term residence on the property. However, residents living in illegal conditions of occupation of land were not accepted as beneficiaries of the outputs offered. Rural families that illegally occupy land usually live in the easements of roads, close to sources of water and on slopes, very frequently in dangerous locations exposed to the risk of floods and landslides. The project failed to solve the situation of hundred of families living in such conditions.

Housing-related outputs offered by the project started, a few days after the disaster, with the delivery of plastics for emergency sheltering. The delivery of this output responded to a joint effort of the United States Office for Disaster Assistance (USOFDA) and the CGOs, and attempted to provide the basic material for the quick repair of affected houses or for the construction of provisional shelters. However, the amount of plastics delivered was insufficient to cover the general needs of the whole rural population affected.

Temporary housing was not part of the project led by the CGOs. However, FOREC organised through other NGOs (including the National University of Bogota) a parallel program of temporary housing that included the consolidation of spontaneously-made shelters and the construction of new units. Various settlements of up to one hundred families were built and consolidated mostly in small towns and in the affected large cities. A proper coordination of information and responsibilities between the NGOs in charge of temporary housing and the NGOs in charge of permanent housing permitted a relatively smooth transition from one stage to the other.

In order to provide multiplicity of choice and to accommodate the project to different types of needs and expectations, the permanent housing project included two parallel streams. One stream was based on the reconstruction of existing units (repair or rebuilding of damaged houses) and the other was based on the marketing and promotion of new pre-fab units. Initially, the pre-fab component of the program targeted the promotion of finished units made by a group of pre-selected companies; for this, a bid was called for and received from pre-fab companies, and a housing exhibition was organised. Companies participating in the exhibition exposed different and innovative technologies to respond to the model proposed by the architects of the Coffee Growers' Federation. Despite the appropriate quality and reasonable prices which were obtained through the bid, very few finished houses were actually sold. In reality, the housing exhibition facilitated the marketing of construction materials and components that most of the residents acquired to use as they built their own houses by themselves. In the end, the two streams of the project merged through the self-help component of the project. The majority of peasants (that in general are used to build housing for themselves) used traditional technologies by building with concrete, bamboo, bahareque, adobe, etc. while also incorporating industrialised components such as corrugated sheets, steel beams, pre-fab doors and windows, plastic water tanks, pre-fab septic tanks, roof drains, etc.

Regardless of the construction technique or the labour force used, the individual projects had to be completed according to the schedule and meet disaster-resistant standards as agreed between each family and the CGO's inspector. The results of the control that the inspectors conducted over the quality and time of construction determined the approval of monthly payments (resulting from the loans and/or subsidies made available to the beneficiaries).

Industry and employment: The main objective of the CGOs was the rapid recovery of the coffee industry. For this reason, a major component of the project was the physical recovery of the infrastructure required for growing, processing and transporting the coffee. In this regard, loans and subsidies were available for the construction or reconstruction of water systems, water tanks, septic tanks, irrigation systems, storage rooms, access roads (inside private property) and the so-called 'beneficiaderos'. A 'beneficiadero' is a basic one or two storey high structure to wash, dry, pack and store the coffee beans before delivery. The quality of these structures was also certified by the inspectors who controlled not only the structural resistance to natural hazards but also the compliancy with environmental standards regarding the preservation of natural resources, the prevention of erosion, the reasonable use of local bamboo and the pollution of sources of water.

Despite the high levels of under and unemployment, subsidies for people who lost their jobs or did not have access to alternative sources of income were not included.

Others: Other outputs such as psychological aid, food, temporary infrastructure, education, technical assistance and information were included in the project. As designed by the CGOs, the project was seen as an opportunity to combine 'hard' and 'soft' outputs in order to provide a holistic response to the needs of the rural residents and to obtain the desired level of economic recovery. These soft outputs were all delivered through the coordination of efforts between the CGOs and other institutions (The World Food Program, the local public service companies, etc.). Medical aid and immediate post-disaster rescue were provided by other NGOs (including the Red Cross and Civil Defense) and were not part of the project lead by the CGOs. The scope of the delivery of food rations and psychological aid reveals that they were not enough to cover the needs of all the affected population.

Results

Transfer: The project obtained an on-time delivery of financial outputs with a strict control over their use and distribution. This implied that the resources were all used by the residents according to the objectives of the project.

Even though the direct and indirect jobs created contributed to the recovery of the population, the rates of under and unemployment after the project were still high in the region. Conversations with officers of the CGO suggest that the general economic recession of the country, the decrease of the selling price of coffee and other financial difficulties proper to the coffee industry and related exports contributed to the difficulty of reactivating the local economy.

The fact that each beneficiary was responsible of his/her own project implied a transfer of responsibility in which each beneficiary could use the resources obtained to respond to his/her own needs. This resulted in total acceptability of the houses built and therefore in total occupation of the units.

There is no evidence that more insurance policies were taken out for the new projects as built. The project did not include insurance companies to participate in the reconstruction and the loans and subsidies were given without the requirement of obtaining insurances. In general it can be said that neither at the level of the project nor at the level of the national program was there a campaign or a program to increase the access to insurance policies for housing and infrastructure.

Despite the fact that the project delivered a series of timely outputs for the recovery of the rural community, the local authorities (municipalities and municipal councils) did not directly participate in the project. In fact, when the project was finished, the CGOs continued to do their normal activities and FOREC was dissolved. The capacity to implement emergency protocols (both

regular or modified) is likely to be compromised by the temporariness of the project and of the multi-organisation that developed it.

The fact that the project only targeted land owners and that renters benefited only indirectly did not permit an increase of land and home ownership in the rural area. However, land and home ownership increased indirectly due to the legalisation of rural properties, contributing in this way to a reduction of soft vulnerabilities.

Community participation: The project transferred to residents the responsibility over the execution of the design, the management, the financing, the production of components and the construction of their projects. In order to benefit from the project, each family was expected to actively participate in defining the scope of their own needs and expectations, proposing a design for approval and executing the project (either through self-help or hiring labor). Other resources, different from the ones provided by the CGOs, could (and were expected to) be used by the residents to complete their projects; this including other loans and/or their own funds. This implied total responsibility over decision making at different levels of the project (from defining the location of the house in the lot to defining the sequence of construction activities to be conducted). Compliance to standards of quality in terms of disaster resistance and environmental protection, plus the control over the proper use of resources, were conducted by expert engineers acting as inspectors. The engineers also contributed in helping the residents design their houses and infrastructures.

Rural residents were not automatically included as beneficiaries of the financial resources offered; instead, they had to take the initiative to apply for the funds by proposing the project, the schedule and the budget required (besides proving land tenure). This approach was taken deliberately by the officers of the CGOs in order to let peasants know that they had to assume the responsibility

for their own recovery and in this way to guarantee total satisfaction with the initiatives built.

Impacts

Project goals: In order to create FOREC, the national government obtained a loan from the World Bank. This loan increased the already high and expensive public external debt of Colombia (estimated at $21,754 million USD in 2001 after the disaster – Clavijo 2001). From the national government's disaster-relief budget, 46 % came from loans given by the World Bank (El Espectador, Newspaper, January 25, 2000); this figure suggest that a considerable proportion of the project was transferred as an additional burden to the already high external public debt.

The timely solutions of the project contributed to the recovery from the effects of the disaster in the environment and in public health, as well as to the consolidation of rural housing (legalisation of properties and physical consolidation of structures). Despite that large amounts of bamboo were used, the control over the use of natural resources mitigated the potential negative effects of the project on the natural environment. The delivery of special solutions targeted to the rural community prevented the migration of peasants to the city, reducing the possibility of increasing urban problems (including urban sprawl and illegal settlements).

The prompt and integral response to the problems of housing, infrastructure, public services, community services and sources of income, permitted a timely recovery of normal (domestic and civil) activities. This response also increased the physical resistance of most constructions and permitted the transfer of better building practices. However, the post-project lack of resources (due to the still difficult economic situation in the region) and the lack of control over

constructions in rural areas are expected to compromise the quality and maintenance of constructions built after the project.

By creating an institution exclusively devoted to reconstruction activities (and therefore of short duration), the strategy chosen by the national government limited the possibility of facilitating institutional development of regular public units. In fact, FOREC was dissolved as soon as its mission was completed, leaving very little information or studies about the expertise gained during the reconstruction experience; on the other hand, the CGOs published several reports and detailed information about the project. It can therefore be said that even though some form of organisational learning was obtained at the level of the organisation in charge of the project, at the multi-organisational and the program level the possibility of organisational learning was lost.

Considering race, gender, and social characteristics, a fair selection of beneficiaries was established by the CGOs in the project. However, the reconstruction project targeted a specific group of beneficiaries (rural land owners) from which people living in illegal occupation of land were excluded. This group represents a vulnerable sector of the society for which there was no solution after the disaster. The objective of reducing the settlements in unsafe areas was achieved by the CGOs except for this particular group of people living in illegal conditions.

3.3.3.2. Analysing unexpected results and impacts

In section 2.2.3.4 a list of seven assumptions were first presented as a guide to the identification of the most frequent (or most likely to occur) cause-effect relationships in projects offering a product in the context of development-oriented objectives. By applying these assumptions to the evaluation of the project lead by the CGOs, the following unexpected results and unexpected impacts were identified:

Assumption No. 1: if: (i) users have access to the product (if the product is affordable, accessible, etc) and (ii) the users 'like' it (if the product corresponds to the needs, desires and expectations of the users), then: the output is acquired: The assumption was *false*. In general, the assumptions presented in chapter two correspond to the sequence of cause-effect relationships between the outputs, the results and the impacts of the CGOs' project. However, the fact that the finished pre-fab houses presented in the housing exhibition were not sold demonstrates that the first assumption did not occur in the project. The promotion and marketing of pre-fab units was based on the assumption that users having access to a product of acceptable quality will acquire it. In fact, the work of specialists in the careful design of the units and the decision to employ the most competent construction companies was expected to guarantee the success of the sales in the housing exhibition. However, in reality, residents acquired construction components instead of complete houses. Residents seem to have recognised the quality of the units; in fact, many used the housing exhibition to 'copy' and take ideas for the construction of their own units. In this case, the unexpected result of 'good' and affordable houses not being purchased is explained by the fact that traditionally, peasants are used to build for themselves their own shelters over a long period of time (that can extend over several generations). As explained by the officers of the Coffee Growers' Federation, "for peasants, building their homes is much more than acquiring a house". Traditionally, it is an evolutionary process that involves various members of the family through a do-it-yourself process that accommodates the availability of resources and the needs of the family.

Assumption No. 2: if the product is acquired and its use corresponds to the needs, desires and expectations of the users, then: the product is used. The assumption was *true*.

Assumption No. 3: if: (i) end-users are shown that resources do not allow for paying labour force; (ii) end-users are taught how to participate in the activities of the project; (iii) end-users have the time (or can manage to get the time) to participate in the project; (iv) end-users are given the resources (tools and materials) to participate; and (v) end-users are shown that the product is not given 'for free' but instead it can be 'paid' for by helping in its production, then: they will participate in producing the product. The assumption was *true*.

Assumption No. 4: if: people use the products (using as opposed to just acquiring the product which is not enough), then: the goal is attained. The assumption was *true*.

Assumption No. 5: if: people participate in producing the product, then: the goal is attained: The assumption was *true*

Assumption No. 6: if: no sudden and/or unexpected changes occur in the environment, then: the expected results and expected impacts occur. The assumption was *true*.

Assumption No. 7: if: a certain expected change occurs in the environment, then: the expected results and expected impacts occur. The assumption was *true*.

3.3.3.3. Representation and description of the organisational system

3.3.3.3.1. Organisational system of the CGOs

To conduct the reconstruction project in the affected rural area of Colombia, the CGOs opted for the optimisation of the regional, national and international network of institutions and contacts established by the organisation for the regular development of the coffee industry (see Fig. 3.21). The organisation

developed the project by using the different levels of committees that the CGOs have established in their regular commercial activities. The project was coordinated in the affected region by transferring there some of the managers normally located in the headquarters of the Coffee Growers' Federation in Bogotá. This structure is different from the traditional ones presented in chapter two (functional, project-based or matrix organisations). In reality it corresponds to a pyramidal network of organisations connected in hierarchical order.

A general external audit was established for the project while an internal (mostly technical) audit was conformed to control the execution of individual projects. This internal audit included engineers already employed by the CGOs and some new ones hired for this activity, all of them working as construction inspectors.

As explained before, the coffee growers were also directly involved in the project. Even though they are represented in the base of the pyramid (as resources were transferred from the top to the bottom of the diagram) they had total responsibility of their own projects.

3.3.3.3.2. Organisational system of the multi-organisation

Fig. 3.22 (which summarises the organisational structure of the whole project) shows the complex network of organisations implied in the CGOs' project. In order to understand this network, it is useful to identify two levels in which the participants of the multi-organisation were involved. A first level corresponds to the national program of reconstruction with which the CGOs' project got involved and the second level is the project itself. In the first level, the activities of program procurement lead to the creation of FOREC, in part by using the funding provided by the World Bank. FOREC served as a bridge between the program at large and the individual projects. In this way, FOREC created a project procurement strategy that resulted in selecting the CGOs for the rural reconstruction. The Coffee Growers' Federation assumed part of the project

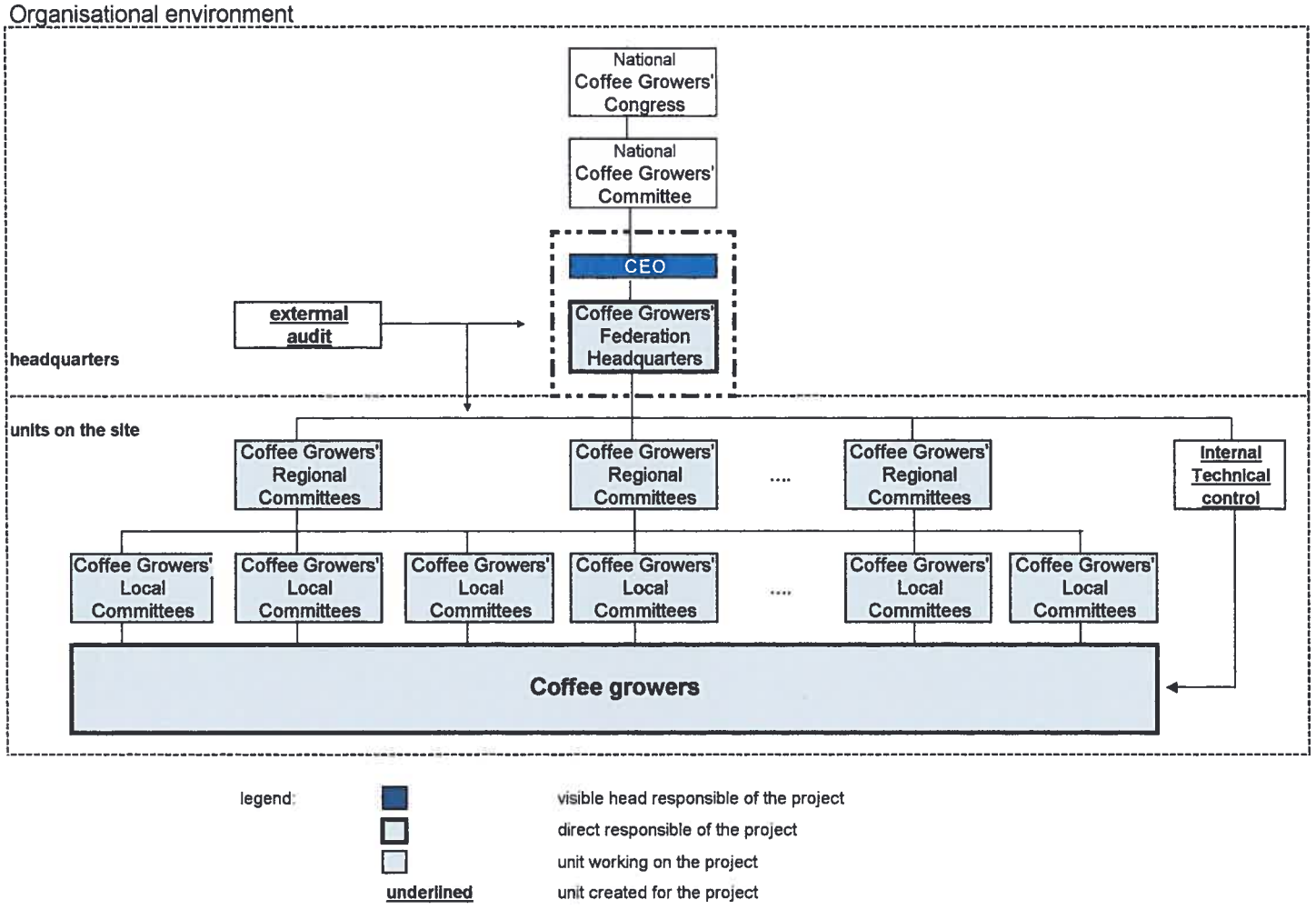


Fig. 3.21 CGOs Internal Organisational design

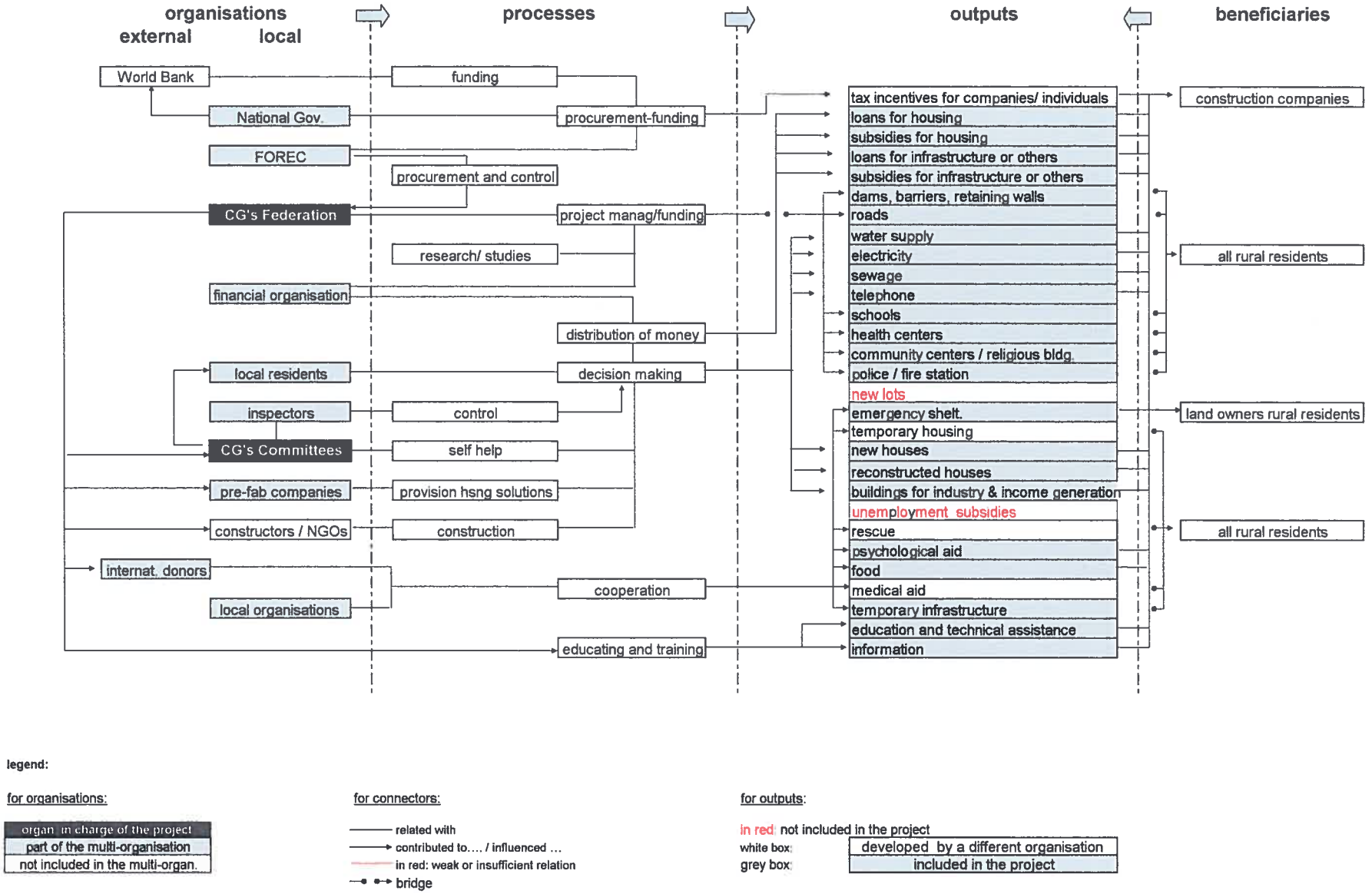


Fig. 3.22 Diagram of the multi-organisation applied to the CGO's reconstruction project

funding and the overall management of the project, under the control and supervision of FOREC.

The first initiatives of project management led to the development of a short period of research and studies (conducted while the phases of immediate relief and rehabilitation took place) and to the selection of a financial institution for the distribution of subsidies and loans. The local and regional committees were in direct contact with the local residents who conducted their own individual projects by making decisions over many of the outputs offered. Control over and technical support for individual projects was conducted by the inspectors (specialised engineers), directly managed by the regional committees. Through the local and regional committees, a self-help plan was implemented; however, beneficiaries could also take advantage of the housing solutions provided by both the pre-fab companies (through the housing exhibition organised by the CGOs), and other constructors and NGOs.

Inter-organisational arrangements between the CGOs, international donors and local organisations permitted the delivery of other outputs such as solutions for emergency shelters, psychological aid, food and temporary infrastructure. In order to guarantee the success of 'hard' outputs, education, training and information were provided as a general umbrella for all of the other services and products offered.

From the activities identified in the WBS of reconstruction projects (section 2.3) the ones implemented in the CGOs' project are checked in the following list:

	Cooperation agreements
X	Funding
X	Procurement
X	Research & studies
X	Distribution of money

	Selection of beneficiaries
X	Project management
X	Control
X	Cooperation
X	Provision of land / housing solutions / temporary housing*
X	Decision making
X	Educating and training
X	Self-help
X	Construction

* Within the activity called "provision of:..." the group of outputs that were included in the project are underlined in this list

From the list of outputs presented in the TIP, the following outputs were not offered in the CGOs' project: (i) new lots and (ii) unemployment subsidies. The following outputs were delivered by other organisations: (i) temporary housing, (ii) rescue and (iii) medical aid. Construction companies benefited from the tax incentives offered by the National program while all the rural residents benefited from the outputs related with infrastructure and community services. The outputs of FORECAFE 1 and 2 (as explained in part 2 of Chapter III) were targeted exclusively to land owner rural residents.

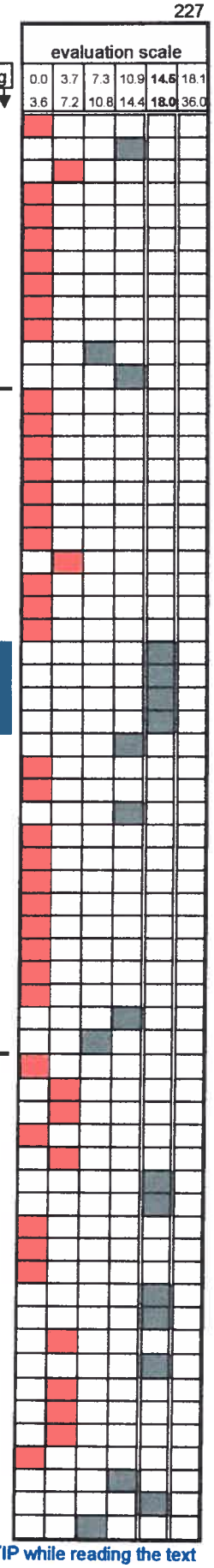
3.3.4. Results of Case study 4: 1998 after Mitch, Choluteca, Honduras, organisation: CECI

3.3.4.1. Analysis of the TIP

Refer to Table 3.4 for the evidence upon which the following analysis is based. Table 3.4 also summarises the headings used in the following section.

Table3.4 project: CECI's reconstruction project in Choluteca, Hondura

section	group	No.	indicator	dif. org
inputs	multi-organisation	1	the capacity to atract funds for the project	2.4
		2	level of integration with the community	11.4
		3	level of integration between organisations	5.0
		4	level of differentiation between organisations	1.4
		5	project's administrative costs	3.6
		6	organisation's capacity to adapt to environm.	2.4
	management tools	7	a census of local residents	0.0
		8	previous studies (typologies, techniques, etc)	0.0
		9	surveys of people's needs	1.4
		10	consultation with the community	2.9
	local resources	11	residents capacity to work in construction	7.9
		12	indigenous materials available	13.7
outputs	financial / funding:	13	tax incentives for companies/ individuals	0.0
		14	loans for housing	0.0
		15	subsidies for housing	0.0
		16	loans for infrastructure or others	0.0
		17	subsidies for infrastructure or others	0.0
	infrastructure	18	dams, barriers, retaining walls	0.0
		19	roads	0.0
		20	water supply	4.6
		21	electricity	3.6
		22	sewage	2.1
		23	telephone	0.0
	community services	24	schools	18.0
		25	health centers	18.0
		26	community centers / religious bldg.	18.0
		27	police / fire station	18.0
	housing	28	new lots	12.3
		29	emergency shelters	0.0
		30	temporary housing	0.0
		31	new houses	13.4
		32	reconstructed houses	0.0
	industry/employm.	33	bldgs/infras. for industry & income generation	0.0
		34	unemployment subsidies	0.0
	others	35	rescue	0.0
		36	psychological aid	0.0
		37	food	0.0
		38	medical aid	0.0
		39	temporary infrastructure	0.0
		40	education and technical assistance	12.6
		41	information	9.6
results	transfer	42	loans given and subsidies allocated	0.0
		43	direct and indirect jobs created	5.4
		44	houses occupied	7.2
		45	insurance policies taken	0.0
		46	emergency protocols implemented	7.2
		47	increment on land ownership	18.0
		48	increment on home ownership	18.0
	community particip.	49	design	0.0
		50	management	0.0
		51	financing of the project	0.0
		52	production components	18.0
		53	construction	18.0
		54	individual responsibility of decision making	4.6
impacts	project goals	55	debt	18.0
		56	environmental impact	7.2
		57	recovery of normal activities	7.2
		58	physical resistance to hazards	6.3
		59	transfer better building practices	3.6
		60	institutional capacity and development	13.7
		61	equality of gender and minorities	16.9
		62	all settlements in safe areas	9.9



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Inputs

Multi-organisation: Despite its experience in international development and fund-raising, CECI could not create a multi-organisation capable of collecting enough funds for the delivery of all the outputs required for the overall recovery of relocated families in Choluteca. Forced to choose among the outputs to be delivered, CECI opted for a self-help housing strategy accompanied by the provision of latrines, construction of communal kitchens and a small project of formation on leadership. The late transfer of funds between the funding agency and CECI disrupted and limited the scope of the 'soft' components of the project (such as formation on leadership and social development).

Local residents, associations and authorities were integrated in the project. Even though the CECI and the project manager had previous experience of work in Central America, they had not previously worked in Choluteca before the disaster. Unable to develop the whole project on its own, CECI's approach consisted in working jointly with local and external NGOs already working in place. However, low levels of integration and differentiation between the organisations are identified in this evaluation, particularly in the distribution of responsibilities leading to the delivery of poorly integrated outputs (including infrastructure and community services).

The use of expatriated personnel and the creation of a unit in place to conduct the project increased the administrative costs of the project to the detriment of the resources allocated to help the affected families. The organisation seems to have underestimated its capacity to find resources and to face up to the financial risks of the project, compromising in this way (after the money was distributed for multiple projects) its possibilities to provide a complete set of outputs for Nueva Choluteca. Besides, the multi-organisation was not prepared to respond to a hostile environment where the lack of resources of the public sector challenged the provision of infrastructure for the construction of new housing.

Management tools: CECI fell short in the development of traditional management tools for collecting information and knowledge about the local needs and expectations. Not conducting an up-front study of local housing reduced the capacity of the organisation to provide an appropriate housing typology for users. In the midst of the project, attempts to match the proposed housing unit to more traditional typologies included changing the material of the roof for clay tiles. Studies of peoples' needs were conducted late and were not reflected in a desirable diversity of solutions. The design of the housing units and in general the design of the outputs of the project were the result of considering what was 'best' for residents rather than the result of consultation with the community.

Local resources: The semi-rural character of the project seems to have facilitated the implementation of the self-help project. Rural residents have a good capacity and interest in working in the construction of their own houses; also local materials (clay, sand, stone, earth) were available for producing the construction components such as bricks, tiles, mortar, and foundations.

Outputs

Financial / funding: No type of financial or funding outputs was offered to residents. Instead, the project was based on the direct delivery or development of certain housing outputs.

Infrastructure: Because of the wide-spread vulnerability associated with floods in the riversides of the Choluteca river, CECI opted for getting involved in the relocation project of Nueva Choluteca, a project that consisted in creating a new settlement for the residents living previously in flood-prone areas close to the river. However, this resettlement initiative did not include the reduction of

vulnerability by building retaining walls, dams, channels, etc., all necessary to control the flow of local rivers and streams.

Despite that the settlement was new, none of the NGOs working in Choluteca worked in the construction of roads; in fact, not even the main access to the settlement (from the road that goes from Choluteca to Tegucigalpa) was paved. Similarly, an infrastructure network to connect the settlement to the regular water system was not included. Instead, and in order to respond to basic needs, water tanks (in the form of large plastic containers) were installed for a centralised distribution of water, which turned out – as might be expected – to be insufficient for the needs of the whole population of the settlement. Similarly, the lack of a proper system of electricity has been replaced in Nueva Choluteca by improvised connections to electricity networks made by the residents themselves; nor were a network of sewage systems or connections to telephones made. Some of the houses benefited from latrines built by CECI in partnership with United Nations' agencies.

Community services: Two schools, a health center, a police station and several churches (from religious-based organisations working in place) were built in the settlement by parallel projects organised by other NGOs.

Housing: The back bone of the project conducted by CECI in partnership with Atlas Logistics was the construction of new housing units in the lots that were sold to the families after the subdivision of the land that was provided by the local Bank. As mentioned in section two of this chapter, the size of the lots neither corresponded to the traditional agricultural use of land nor to a sustainable suburban concept. When CECI started its participation in the resettlement program, the period of emergency shelter and temporary housing had finished without the people having proper accommodation. In fact, residents were forced to improvise shelters with plastics and debris while participating in the construction of the new settlement.

The new houses were delivered late, after people lived up to three years in improvised shelters. The design of the house did not correspond to peoples' needs and later modifications to the units demonstrate that the units were really only a core house that required later completion to respond to the cultural characteristics and needs of the families as well as to respond to the high temperatures and heavy rains of the region.

The resettlement strategy involved the construction of housing "from scratch" neglecting the possibility of reconstructing the houses located in flood-prone areas (provided dykes and dams were built first). In this process, the opportunity of recycling construction and housing components from the existing houses was missed; while the new housing was built without kitchens, washrooms, showers and verandas.

Industry and employment: Despite the major need for sources of income in the Choluteca region, the project did not include the construction or reconstruction of buildings for industry or creating employment, nor did the project include the provision of unemployment subsidies or financial help.

Others: Only a few soft outputs were delivered with the project; they were associated with the education and training component of the self-help program and a parallel initiative of formation on community leadership and social work with women. Other outputs such as rescue, psychological aid, food, medical aid and temporary infrastructure were never included.

Results

Transfer: As it was mentioned earlier, the project did not permit the residents to use the available funds to respond to their own needs and expectations, as neither subsidies nor loans were provided. The creation of direct or indirect

employment opportunities only existed in the short term and is only associated to construction activities in which residents were used for either the production of components (doors, windows, tiles, etc) or for the construction of the units. Even though some type of knowledge transfer was implemented in this process and therefore, an increased capacity to work in qualified jobs can be expected, the jobs created by the project were not enough to facilitate the recovery of the local economy.

One of the major setbacks of the project was the lower percentage of occupation of the units built, which reveals the non-conformity of the outputs with the real needs, characteristics and expectations of the community. The lack of a housing policy in the region (even after the disaster) suggests that nothing has been done in order to increase access to housing insurance. Some type of institution building after the direct work between CECI (and other NGOs) and the Municipality of Choluteca was expected to have influenced the institutional capacity to implement emergency protocols, and to increase the awareness of risk and vulnerability. However, these measures have not been reported and appear not to have been implemented in a systematic manner.

The provision of legal property to affected families is a step forward to the reduction of vulnerability in the region as it increases land and home ownership in the region by giving titles of land and housing to many residents who were previously living in illegal occupation of land.

Community participation: beneficiaries of the project did not have direct participation in the design, management and financing of the project. Community participation, as proposed by CECI and other NGOs was limited to the involvement of the beneficiaries in the production of construction components and in the construction of the housing units. Consequently, residents have very limited responsibility over their own housing and instead were allocated tasks

and responsibilities to be fulfilled in a scheme that allowed very little individual decision making over the products and services required for recovery.

Impacts

Project goals: The public sector in Honduras did not assume major loans or credits for post-Mitch reconstruction, leaving most of the activities and responsibility of reconstruction to local and external NGOs. This was the case in Nueva Choluteca where the construction of the project represents no financial burden for the Municipality or the central government.

Even though it is out of the scope of this study to evaluate in detail the effects on public health, the lack of infrastructure and public services in Nueva Choluteca is expected to have a major negative effect on the environment and on public health. Several diseases common in the region (such as malaria and 'dengue') are usually associated with the lack of proper drainage systems. Besides, nothing has been done in Choluteca to reduce the effects in the natural environment if another similar disaster occurs.

Due to the late provision of outputs, and the lack of infrastructure and employment, the recovery of normal activities in Nueva Choluteca started very late and has not completely occurred. Even though the original houses developed in CECI's project are disaster-resistant, the poor design and small size of the units has forced residents to adapt them to their real needs of space and to the extreme temperatures of the region. In many cases, these additions have not followed disaster resistance principles; in fact, it is common to find new verandas, new rooms, and new spaces for the showers built with improvised materials (wood, plastics, corrugated iron sheets, etc.) without any consideration of disaster resistance and disconnected from the structure of the original units. This very fact suggests that despite of the emphasis of the project on the training component during self-help activities, the transfer of better building practices has

not necessarily been reflected in the later constructions made by the residents. This might also be related to the lack of resources to build proper structures, and to the lack of resources to maintain them.

The direct work of CECI and other NGOs with the Municipality of Choluteca, suggests that some type of institution building was included in the project. However, a visit to the Municipality and discussion with the officers, revealed that even though a better understanding of the risks and the living conditions of the poor residents exists, systematic measures to reduce vulnerabilities have not taken place.

The selection of the beneficiaries was conducted with a fair consideration of minorities and the most vulnerable groups in the region. This work included the participation of local institutions and permitted single parent families and women to be beneficiaries of the project and therefore to become land and home owners.

By giving land and shelter to residents, a step forward has certainly been made; however, major vulnerabilities (particularly soft ones such as unemployment, lack of education, lack of services, etc.) still exist in Nueva Choluteca. A similar disaster can still happen if these vulnerabilities are not mitigated.

3.3.4.2. Analysing unexpected results and impacts

In section 2.2.3.4 a list of seven assumptions were first presented as a guide to the identification of the most frequent (or most likely to occur) cause-effect relationships in projects offering a product in the context of development-oriented objectives. By applying these assumptions to the evaluation of the project lead by CECI in Nueva Choluteca, the following unexpected results and unexpected impacts were identified:

Assumption No. 1: if: (i) users have access to the product (if the product is affordable, accessible, etc) and (ii) the users 'like' it (if the product corresponds to the needs, desires and expectations of the users), then: the output is acquired: The assumption was *true*.

Assumption No. 2: if the product is acquired and its use corresponds to the needs, desires and expectations of the users, then: the product is used. The assumption was *false*. The low level of housing occupation (only 42% of the houses are occupied by their original beneficiaries) reveals that this assumption failed in the Nueva Choluteca project.

Assumption No. 3: if: (i) end-users are shown that resources do not allow for paying labour force; (ii) end-users are taught how to participate in the activities of the project; (iii) end-users have the time (or can manage to get the time) to participate in the project; (iv) end-users are given the resources (tools and materials) to participate; and (v) end-users are shown that the product is not given 'for free' but instead it can be 'paid' for by helping in its production, then: they will participate in producing the product. The assumption was *true*.

Assumption No. 4: if: people use the products (using as opposed to just acquiring the product which is not enough), then: the goal is attained. The assumption was *false*. In fact, even though some residents used of the products offered by the project (the houses, kitchens, latrines and some training sessions), the final goal of reducing the overall vulnerability of the community was not attained.

Assumption No. 5: if: people participate in producing the product, then: the goal is attained: The assumption was *false.* The participation of the residents in construction activities did not lead in this project to a total reduction of the vulnerabilities.

Assumption No. 6: if: no sudden and/or unexpected changes occur in the environment. then: the expected results and expected impacts occur. The assumption was *true*.

Assumption No. 7: if: a certain expected change occurs in the environment. then: the expected results and expected impacts occur. The assumption was *true*.

3.3.4.3. Representation and description of the organisational system

3.3.4.3.1. Organisational system of CECI

A unit that was working in Guatemala (and that had previous experience in the region) was used to conduct this project (see Fig. 3.23). One project director was selected for Guatemala while another one was employed for the project in Honduras. The project in Honduras was subdivided in two main groups, one included 5 specific projects in the region of Choluteca (one of these specific projects is the case reported on this study) and another one in Tegucigalpa. The unit working in place shared an accountant and a construction officer for both the Guatemalan and Honduran projects.

This local management unit reported to units in the headquarters in Montreal and was supposed to work in direct coordination with the Coordinator of Humanitarian and Reconstruction Programs in a traditional project-based structure (as proposed in section 2.3). However, later conversations with the Coordinator in Montreal revealed that she did not have direct control and understanding of the specifics of the project. In other words, the officer in place was working very much on his own, at least with regards to the project in Nueva Choluteca. A later attempt of the coordinator to evaluate the project in Nueva Choluteca in 2001 also failed as the unit in place was dissolved soon after the end of the project and most of the contacts in place had been lost.

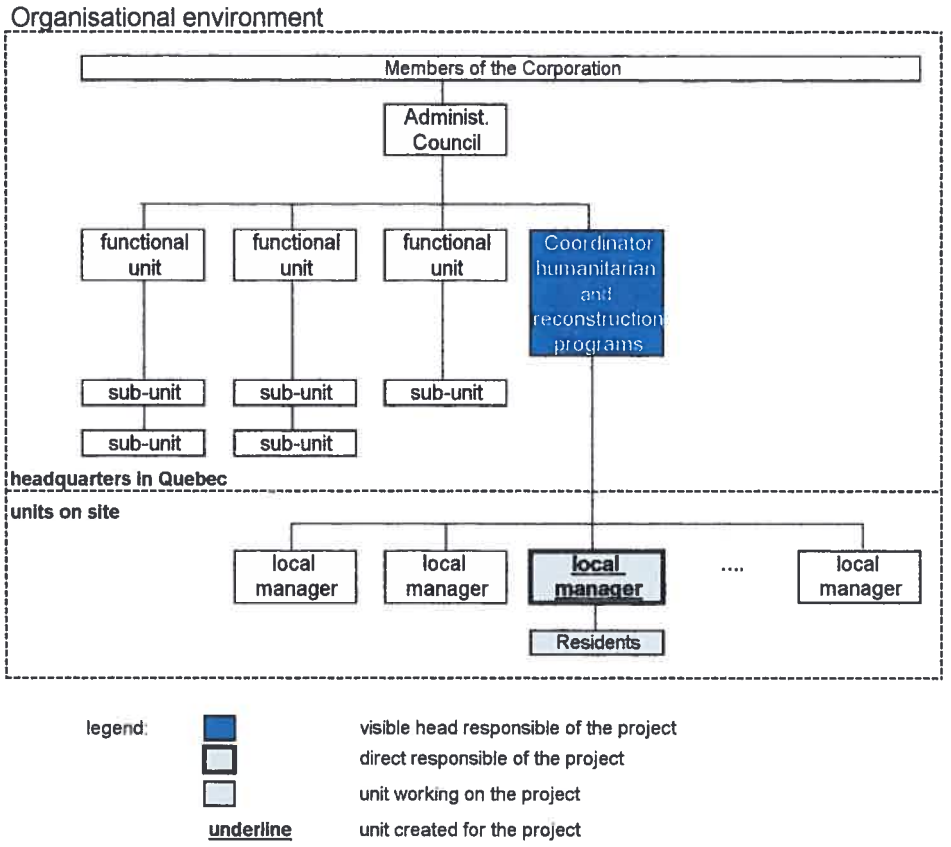
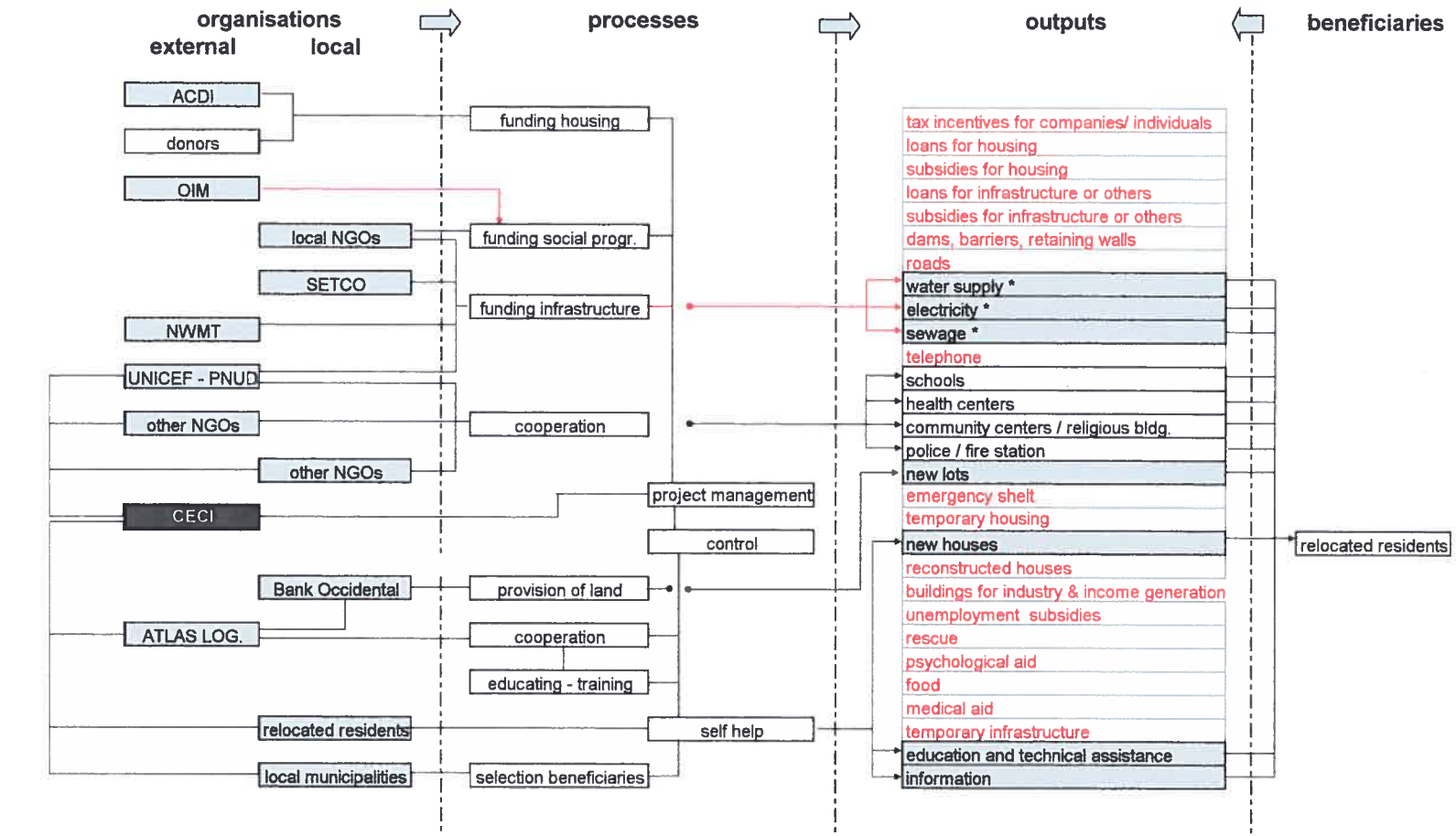


Fig. 3.23 CECI Internal Organisational design



* These outputs were not finally accomplished and had to be improvised by local residents (see the equivalents FIPs)

Fig. 3.24 Diagram of the multi-organisation applied to CECI's reconstruction project

The lack of control and follow up of the specific project in Nueva Choluteca and the difficulties of the project in terms of performance did not represent a particular embarrassment for CECI as the project was only a part of a large program (reconstruction in Honduras and Guatemala as a whole), which CECI could account for in a more systematic manner. In fact, the reports conducted by CECI include the specific project in Nueva Choluteca as only a small component of a larger and successful intervention in Central America after Mitch. In these reports, the limited success of the project in Nueva Choluteca is disguised by the statistics of the overall intervention at the program scale (a fund raising campaign of more than one million Canadian dollars and more than 2,300 families benefited).

3.3.4.3.2. Organisational system of the multi-organisation

The structure of the Nueva Choluteca resettlement program was based on a network of organisations each responsible for individual projects. CECI's project was particularly attached to the initiatives initiated by Atlas Logistics for the construction of houses in the lots sold to beneficiaries. The funding campaign conducted by CECI collected funds from CIDA and other Canadian donors. Community services and latrines, and the provision of water in Nueva Choluteca were conducted through cooperation activities with other local and external NGOs. Even though CECI conducted the central role of project management for its specific project, most of the outputs (housing, education and training) were delivered though the self-help activities (see Fig. 3.24).

At the scale of the overall relocation program, the enlarged multi-organisational structure lacked a leader organisation capable of determining the priorities of the project and capable of distributing different responsibilities among the NGOs involved. The lack of a central plan and coordinated activities for the provision of community services and public services demonstrates the disadvantages of not

having a proper level of integration and differentiation among the organisations involved.

Figure 3.24 shows the activities that were conducted in the project. From the activities identified in the WBS of reconstruction projects (section 2.3) the ones implemented in CECI's project in Nueva Choluteca are checked in the following list:

	Cooperation agreements
X	Funding
	Procurement
	Research & studies
	Distribution of money
X	Selection of beneficiaries
X	Project management
X	Control
X	Cooperation
X	Provision of land / housing solutions / temporary housing*
	Decision making
X	Educating and training
X	Self-help
	Construction

* Within the activity called "provision of:..." the group of outputs that were included in the project are underlined in this list.

The following outputs of the project were targeted to relocated residents: in terms of community services (provided by other NGOs): (i) schools, (ii) a health centre, (iii) churches and (iv) a police station. In terms of housing: (i) new lots and (ii) new houses; and in terms of soft outputs: (i) education and technical assistance and (ii) information.

Chapter IV, Discussion and conclusions

Chapter IV - Discussion and conclusions

This section analyses the results of the research at four main levels: (i) the results obtained by developing the research methods used in the study; (ii) the results of the methods applied to the four case studies – validation of the hypothesis and its corresponding micro-hypotheses, (iii) the results obtained by comparing the patterns found in the empirical study with previous research findings in order to obtain analytical generalisations, and (iv) the main contributions of the research.

4.1. The results obtained by developing the research methods used in the study

The need to assess the performance of the projects required answering two basic questions: what to evaluate? and, how to evaluate it? Answering these two questions implied identifying the existing approaches to evaluation and adapting or adopting a method responding to the particular needs of the study. Defining what type of evaluation was required was crucial at this stage; finally, an ex-post evaluation characterised for the assessment of development oriented criteria was chosen. Indeed the so-called Log. Frame. proved to be the most used evaluation tool in the field of international development; however, it proved to have important limitations in regard to (i) considering the project as a system (with different levels of influence between the project system and its environment) and (ii) evaluating the unexpected outcomes (be they positive and negative). During this process, the opportunities and limitations of project evaluation were identified and, keeping them in mind, the specific method of evaluation was developed for this research. Building up on the Log. Frame., an improved model of evaluation was proposed (and adapted to the requirements of this research) and the definition of the performance criteria was made corresponding to certain defined objectives.

Working from these objectives, sixty two indicators of performance were selected to assess different stages of the project (from inputs to impacts). The study of evaluation methods had demonstrated that by selecting the performance criteria the evaluator assumes a stake (a biased position) regarding the aspects that he/she wants to evaluate. After recognising this, the chosen criteria become the "rules of the game" from which the rest of the argument is conducted. A list of indicators of outputs required for the overall recovery of affected people was prepared; however, the analysis of "how to assess those outputs" revealed that their importance regarding the overall performance of the project depended on the degree of vulnerability existing before the project started (before and/or after the disaster). Once this list was prepared, a Form of Indicators of Performance (FIP) was developed for each indicator; each form has a simple and standardised way of assessing the indicator and assigning it a value corresponding to its level. To try to make the evaluation as objective and systematic as possible (and therefore to achieve the goal that same values would be assigned by different evaluators) the forms translate the indicators of performance into a series of statements that can be easily assessed in a multiple choice manner.

Taking advantage of the computerised systems, the FIPs were developed in MS Excell spreadsheets from which the final values of evaluation of each indicator were related to a summary table called the Table of Indicators of Performance (TIP). Bringing together the values obtained from the FIPs, this table illustrates, in a simple and graphic manner, the level of performance of each indicator, allowing the reader to easily have an idea of the overall performance of the project. In these tables, higher levels of performance are represented in gray and lower levels in red, permitting the reader to easily compare the TIP of each project and thus to have an idea of the benchmarking level of each of them. A series of assumptions (usually established in the process of developing a development oriented project) have been identified in order to be used as a guide revealing possible unexpected results and impacts. According to the

method of evaluation chosen, a careful analysis of unexpected outcomes is crucial to understand not only the logical sequence of events in the project system but also to master the eventual impacts resulting from influences of the environment.

4.1.1. Benchmarking the overall performance of the four projects:

Following the method of evaluation, the four TIPs (one for each project) were compared in order to create a comparative scale of performance of the four projects. This comparison was complemented by the review of unexpected results and impacts in order to obtain a larger picture of the level of success of the projects. The observation of the TIPs shows that the project with higher values in the indicators of performance is the CGOs' project in rural Colombia (it is the project with more outputs developed), followed by FUNDASAL's project in rural El Salvador. CECI's project in Honduras and the MSS's project in San Salvador had the lower values in most of the indicators (also very few outputs were conducted). It is also observed that dramatic effects in the delivery of outputs were caused by the unexpected outcomes of the projects in San Salvador and Honduras. Less negative effects occurred in the projects in Colombia and rural El Salvador, where the unexpected outcomes had less repercussion in the development of the CGOs' and FUNDASAL's objectives.

Keeping this in mind, the level of overall performance of the projects can be benchmarked as follows [1]:

First case study: FUNDASAL's project in rural El Salvador:
Intermediate high level

Second case study: MSS's project in San Salvador:
Lowest level

[1] The projects are not listed according to their level of performance but in the order they are always presented in the text

Third case study: CGOs' project in rural Colombia:
Highest level

Fourth case study: CECI's project in Honduras:
Intermediate low level

4.2. The results of the methods applied to the four case studies – validation of the hypothesis and its corresponding micro-hypotheses

This section develops the relations between the performance of a project and its organisational design. To do so, it is important to remember that the hypothesis of the study proposes that the performance of the project is a dependent variable of four main variables:

First variable	The level of integration and differentiation within the multi-organisation, including inserting the project in a larger program of reconstruction
Second variable:	The multi-organisation's strategic capacity to attract funding
Third variable:	The multi-organisation's capacity to share and react to the risks of the environment
Fourth variable:	The level of user's responsibility for individual decision-making among a series of choices offered

As presented in Chapter II (section 2.5, page 107), various cause-effect relationships need to be examined to validate each of the four aspects included in the hypothesis. For each relationship a few micro-hypotheses are proposed. These micro-hypotheses are validated (true or false) based on the evaluation of the set of projects studied in this research. Some micro-hypotheses are validated by cross analysis -that is to say by comparing different indicators and the overall performance of the project; others are validated in a more discursive manner in which an analysis of important aspects of the projects is conducted. Please note that not all of the indicators of performance are used here for the cross analysis, only the ones that are directly related with the micro-hypothesis

proposed. However, all the indicators of the TIP are considered for assessing the overall performance of the projects.

4.2.1. First variable of the hypothesis

First variable	**The level of integration and differentiation within the multi-organisation, including inserting the project in a larger program of reconstruction**
Second variable:	The multi-organisation's strategic capacity to attract funding
Third variable:	The multi-organisation's capacity to share and react to the risks of the environment
Fourth variable:	The level of user's responsibility for individual decision-making among a series of choices offered

A. Possible relationships between the level of differentiation and integration (indicators of inputs No. 2, 3 and 4) and the overall performance of the project (including expected and unexpected results and impacts): **The micro-hypothesis is: higher levels of integration and differentiation lead to higher levels of performance.**

The following 'values' were obtained in these aspects for each project:

FUNDASAL's project:
-13,2 points for level of integration with the community
-5,8 points for integration between organisations
-15,8 points for differentiation between organisations

MSS's project in San Salvador:
-9,6 points for level of integration with the community
-0,0 points for integration between organisations

	-1,4. points for differentiation between organisations
CGOs' project in Colombia:	-13,2 points for level of integration with the community
	- 18 points for integration between organisations
	-18 points for differentiation between organisations
CECI's project in Honduras:	-11,4 points for level of integration with the community
	-5,0 points for integration between organisations
	-1,4 points for differentiation between organisations

The evaluations demonstrate that, in fact, higher levels performance (see 'benchmarking', section 4.1.1, page 244) occur in the projects that present higher levels of integration and differentiation. *The micro-hypothesis is true*.

B. Possible relationships between the fact that the project was either independent or else coordinated with a larger program of reconstruction and the overall performance of the project (including expected and unexpected results and impacts): **The micro-hypothesis is: if the project is well integrated into a larger program of reconstruction the level of performance is higher.**

The CGOs' rural project in Colombia was developed under the framework of a larger program of reconstruction lead by FOREC. Due to the complexity and large variety of outputs required for recovery, the project benefited from the complementary products and services offered by other NGOs and the National Government through the FOREC fund. Similarly, CECI's project in Honduras attempted to get integrated in a larger program of relocation in Nueva Choluteca.

However, in this case, the addition of NGOs working in place did not form a coherent program with a common objective and with the required distribution of responsibilities.

On the other hand, FUNDASAL's and the MSS's projects were developed in a rather independent manner detached from other initiatives. This approach limited the quantity and variety of outputs that were offered to residents, compromising the overall performance of the two projects. Higher performance appeared in the CGOs' project - which was adequately coordinated with other initiatives in a coherent master plan of reconstruction; *the micro-hypothesis is true.*

C. The relationship between the different organisations in the diagram of organisational design and the delivery of outputs. Particularly if an output is not delivered in the project and none of the organisations took care of it: **The micro-hypothesis is: the outputs that were not developed correspond to missing or insufficient links within the multi-organisation**.

The diagrams of multi-organisational designs (3.18; 3.20; 3.22 and 3.24) show that the organisational structure with most links integrating project participants was the CGOs, followed by FUNDASAL, CECI and the MSS. In the same order their projects had higher to lower levels of overall performance. Even though it might seem obvious, it is important to remark here that, in fact, the capacity to deliver multiple outputs corresponds to the multi-organisational links in between project participants. This is not surprising considering that the variety and quantity of products and services required to increase the local residents' capacity to have access to resources can rarely be provided (or developed) by a single institution. Multiplicity and quantity of outputs corresponds then to multiplicity and variety of institutions working together with a common objective. This observation demonstrates that *the micro-hypothesis is true.*

D. The possible relationship between the amount of relations and organisations participating in the multi-organisation and the variety and quantity of outputs offered: **The micro-hypothesis is: more organisations participating and more relations in between them lead to higher levels of performance**.

The results explained for the previous micro-hypothesis also demonstrate that this *micro-hypothesis is true*. In fact, both of the micro-hypotheses are very similar and both apply to the situation found in the case studies.

E. The possible relationship between the amount of processes included in the project (processes listed in the WBS) and the overall performance of the project (including expected and unexpected results and impacts): **The micro-hypothesis is: the more processes included in the project the better the performance of the project**.

The analysis of the multi-organisations established for the projects demonstrates that the number of activities per project was:

FUNDASAL's project in El Salvador:	-12 activities
MSS's project in San Salvador:	-8 activities
CGOs' project in Colombia:	-12 activities
CECI's project in Honduras:	-8 activities

It is not surprising that the two projects with more activities conducted had higher levels of performance than the two other projects with less activities developed. In fact, this demonstrates that the level of performance is directly related with the variety and multiplicity of activities conducted among the participants of the multi-organisation. *The micro-hypothesis is true.*

F. The possible relationship between the amount of organisations participating in the project and the amount of processes conducted: **The micro-hypothesis is:**

more organisations participating in the project lead to more processes being conducted.

The analysis of the multi-organisations established for the projects shows that the number of organisations participating in each project was:

FUNDASAL's project in El Salvador:	-8 participants
	-12 activities
MSS's project in San Salvador:	-4 participants
	-8 activities
CGO's project in Colombia:	-12 participants
	-12 activities
CECI's project in Honduras:	-14 participants
	-8 activities

This list suggests that *the micro-hypothesis is only in part valid*. Certainly the project in San Salvador was negatively influenced by the fact of not having enough partners in order to conduct the complexity of outputs required. In the CGO's and FUNDASAL's projects these partnerships proved crucial for developing the wide range of products and services required for recovery. However, in the case of CECI's project in Nueva Choluteca, the assembly of a great number of participants did not translate in more processes developed and better performance.

4.2.2. Second variable of the hypothesis

First variable	The level of integration and differentiation within the multi-organisation, including inserting the project in a larger program of reconstruction
Second variable:	**The multi-organisation's strategic capacity to attract funding**
Third variable:	The multi-organisation's capacity to share and react to the risks of the environment
Fourth variable:	The level of user's responsibility for individual decision-making among a series of choices offered

A. Possible relationships between the multi-organisation's capacity to attract funding (indicator of inputs No. 1) and the overall performance of the project (including expected and unexpected results and impacts): **The micro-hypothesis is: better capacity to attract funding leads to better performance of the project.**

In terms of capacity to attract funding the following 'values' were obtained in each of the projects:

FUNDASAL's project in El Salvador: -14.4 points
MSS's project in San Salvador: -0 points
CGO's project in Colombia: -18 points
CECI's project in Honduras: -2.4 points

In the empirical study, the capacity of the multi-organisations to attract funds to develop the outputs required for recovery corresponds to the overall benchmarking of the performance of the projects. However, before validating the hypothesis as 'true' it is important to consider the following - related - micro-hypothesis.

B. The relationships between the external factors influencing the project and the multi-organisation's capacity to attract funding: **The micro-hypothesis is: if the multi-organisation's capacity to attract funding is low it is due to influences of the environment (external factors).**

In the project lead by the MSS in San Salvador, the capacity to attract funding for the project was compromised by aspects of the environment, notably the lack of cooperation between the National Government and the Municipality.

However, the lack of funding in the case of CECI's project in Nueva Choluteca responds to a different reason. In Nueva Choluteca, the lack of initiatives from the local and national governments resulted in total lack of public investment in infrastructure for the new settlement. The funds obtained by CECI were not enough to deal with both housing and complete infrastructure at the same time. With a restricted budget, CECI opted for the construction of more houses (and some latrines). The restricted budget assigned by CECI for the project in Nueva Choluteca contrasts with a larger budget obtained by CECI in the funding campaign of the general program of reconstruction for Central America.

As a development-oriented NGO, based on donations and funding campaigns, the restricted budget allocated to the initiative in Nueva Choluteca is only explained by the deliberate decision made by CECI of sharing the resources obtained for the reconstruction program for Central America (the program at large) in the largest number of individual projects as possible. This decision might be explained in two ways. The reason that is officially presented by CECI is that the resources were distributed with the objective of splitting them as much as possible in order to help the largest number of families. This for example, is used as an explanation of why the houses did not include indoor washrooms. However, another possible explanation, which is not an official reason given by CECI, is that this organisation seeks as much visibility as possible; and therefore, the option of building many units was chosen over -for example- the

option of building infrastructure (which is a less visible output). This second explanation seems reasonable considering that CECI is a donations-based NGO and therefore needs to show tangible (and eventually visually impressive) results to its donors.

This analysis suggests that, in reality, the way in which this second aspect of the research hypothesis is established is insufficient. The hypothesis of the study is based on the notion that the funds obtained for the project are linked to its overall performance. The four cases studied here suggest that this is only true up to a certain level. The problem of quantity vs. quality of housing solutions seems to be important here. Let us explain this. When doing a housing project, an organisation has two main approaches (an infinite number of combinations of these two possibilities may exist): (i) to develop more basic outputs (i.e. houses) with lower standards of quality (for example without infrastructure as it was the case in Nueva Choluteca); or (ii) to develop fewer outputs (i.e. houses) but with higher standards of quality or accompanied by complementary soft outputs. In the first approach more residents benefit whereas in the second fewer residents benefit but they obtain better outputs.

Therefore, the problem of performance depends here on the criterion that is used to assess it. If the criteria of quantity of families benefited is prioritised (which by the way, is also a valid criterion) then a project that applies the first approach is considered 'good'; however, if the criterion used to assess the performance is mostly based on the quality of habitat as a whole, then the second approach is consider to be 'better'. The method of evaluation developed here in Chapter II to assess the performance of the case studies considers both quantitative and qualitative aspects. The quality is related to the development of a complex series of outputs and objectives that are required for overall recovery, keeping in mind a comprehensive view of the resources need for appropriate human habitat. The quantity is assessed in the FIPs when asking, for example, are the outputs enough to cover the needs of the population, are all the

settlements in safe areas, was equality obtained, etc. However, the method deliberately puts particular emphasis in the qualitative aspects of reconstruction (remember that as mentioned in Chapter II, the rules of the game include that the evaluator selects the criteria by which she or he wants to assess the project)

Considering this particular way of assessing the performance of projects (a way that prioritises quality-over-quantity), the amount of funding collected for the project is less important as a variable of performance. Indeed it can be argued that a project with a very low budget can be considered 'good' if it only develops 10 houses of high level of quality.

However, the situation seems to be more complex than that. It is interesting to highlight that if we assess the performance of the projects from the point of view of quantity (number of units built, number of loans/subsidies given, and so on) we come to the same benchmarking levels we obtained from the method of evaluation chosen for the study (see the analysis of the previous micro-hypothesis), that is to say, that the CGO's project would still be in the highest level, FUNDASAL's project in second, CECI's project in third and MSS's project in the lowest level.

It is obvious that in extreme cases such as the MSS's project in San Salvador, the lack of funding is largely responsible for the low level of performance obtained. However, it is not possible to generalise that the level of performance of a project (considering the criteria chosen for the evaluation method used in this study) is directly related with the multi-organisational capacity to obtain funds. It rather seems to be related to the priorities chosen by the organisation. Notably, the priorities related with how (on what) to spend the resources that are obtained.

If we accept this argument, *the micro-hypothesis suggested here loses its purpose*, because it no longer demonstrates that an influence of the environment

over the collection of funds determines the level of performance expected from the project.

C. The relationships between the strategic planning of the organisation responsible for the project and the multi-organisation's capacity to attract funding: **The micro-hypothesis is: a well-established strategic plan that includes positioning the organisation in the market of international funding leads to a better capacity to attract funding.**

The CGO's project in Colombia and FUNDASAL's project in El Salvador demonstrate that, in fact, pre-disaster arrangements with other institutions (national and/or international) were crucial for the performance of the project. This privileged position was, in both cases, obtained through a strategic plan of positioning the organisation in the global environment. In the case of the Colombian CGOs, this strategic plan corresponded to the functioning of the coffee growers' business, which requires careful relations with the National Government (particularly with the Presidency) and with international organisations. In the case of FUNDASAL, it responded to the interest of the organisation in finding a place in the international market of international funding in order to accomplish its regular initiatives. The lack of public support in El Salvador had forced FUNDASAL to develop adequate strategies for private and international fund-raising that proved beneficial in the reconstruction initiative.

In the case of CECI, its capacity to apply for funding from the government of Canada, and its long-term reputation among private philanthropists in Quebec was also beneficial. Of course both of these relations are part of a strategic plan of fund-raising established by CECI way before the disaster. On the other hand, the case of the MSS suggests that only a very low chance of success exists if the funding campaign starts from a tactical need in the immediate aftermath of the disaster. The four cases certainly demonstrate that *the micro-hypothesis is true*.

4.2.3. Third variable of the hypothesis

First variable	The level of integration and differentiation within the multi-organisation, including inserting the project in a larger program of reconstruction
Second variable:	The multi-organisation's strategic capacity to attract funding
Third variable:	**The multi-organisation's capacity to share and react to the risks of the environment**
Fourth variable:	The level of user's responsibility for individual decision-making among a series of choices offered

A. Possible relationships between the organisation's capacity to adapt to the environment (indicator of inputs No. 6) and the overall performance of the project (including expected and unexpected results and impacts): **The micro-hypothesis is: the better the capacity of the organisation responsible for the project to adapt to the environment the better the performance of the project.**

The 'value' obtained by the four projects in relation with their capacity to adapt to the environment is:

FUNDASAL's project in El Salvador: -14.4 points
MSS's project in San Salvador: -2.4 points
CGO's project in Colombia: -16.2
CECI's project in Honduras: -2.4 points

These values correspond to the same order to the benchmarking of the level of performance of the projects. *The micro-hypothesis is true.*

B. Possible relationships between sudden changes of the environment (so-called "external factors" in the model of evaluation) and the overall performance

of the project (including expected and unexpected results and impacts): **The micro-hypothesis is: external negative factors affect the performance of the project, particularly the capacity to deliver the outputs.**

The following external factors had negative effects in the performance of the projects:

In the case of FUNDASAL's project in El Salvador the lack of initiatives from the Central government for the construction of rural infrastructure caused FUNDASAL's housing initiative not to have an equivalent support from the public sector for complementary services and infrastructures. With this major influence of the environment, FUNDASAL opted for a tactical decision that responded to the construction of a large amount of core-type housing units (quantity) rather than to the development of fewer completely serviced houses. A similar external influence conducted CECI to adopt the same strategy in Nueva Choluteca. As is demonstrated in the evaluations, these external factors (followed by the chosen tactical decisions) had a negative impact on the overall performance of the projects.

In the case of the MSS's project in San Salvador the negative impact of the lack of cooperation between the national government and the local authorities had an evident impact on the collection of funds. In the case of rural reconstruction in Colombia, the underestimation of the local residents' reluctance to buy finished houses had a negative impact on the intention of marketing and selling pre-fab units. In both cases the external factors seem to have had an influence in the performance of the project.

However, it is also important to note that the negative aspects of the CGO's project in Colombia respond more to tactical decisions made within the multi-organisation than to external factors particular to the environment. The negative values obtained in the program (no provision of lots or unemployment subsidies,

high debt, lower level of institutional capacity and development, etc.) respond to deliberate decisions following from the way the project was prepared (i.e. a project for land-owners, a project based on a public loan, deliberate independence from local authorities to avoid corruption, etc.).

In conclusion, it is possible to say that the major influences of the environment (lack of initiatives from the public sector, lack of cooperation, cultural approaches to developing housing, etc.) had an influence in the system that creates the project. In reaction to these negative effects, the organisations assumed tactical approaches (such as building just core-type units instead of completely served houses) that translated into a certain level of performance. Therefore, *the micro-hypothesis is only in part true* and requires the following corollary: external negative factors affect the system that creates the projects and not directly the performance of the project.

C. Possible relationships between management tools used to reduce uncertainty (indicators of inputs No. 7, 8, 9 and 10) - uncertainty, it is well known, is one of the major causes of risks - and the overall performance of the project (including expected and unexpected results and impacts): **The micro-hypothesis is: the better the performance in the development of the management tools the better the performance of the project.**

The 'values' obtained by the four projects in relation with the management tools are:

FUNDASAL's project in El Salvador: -12.6 points for "census of local residents"
-15.8 points for "study of previous typologies"
-11.5 points for "survey of people's needs"

	-7.9 points for "consultation with the community"
MSS's project in San Salvador:	-8.1 points for "census of local residents"
	-9.4 points for "study of previous typologies"
	-4.3 points for "survey of people's needs"
	-10.1 points for "consultation with the community"
CGO's project in Colombia:	-15.3 points for "census of local residents"
	-18.0 points for "study of previous typologies"
	-13.7 points for "survey of people's needs"
	-7.9 points for "consultation with the community"
CECI's project in Honduras:	-0.0 points for "census of local residents"
	-0.0 points for "study of previous typologies"
	-1.4 points for "survey of people's needs"
	-2.9 points for "consultation with the community"

If the projects are classified from higher to lower values we have: first: the CGOs' project in Colombia, second: FUNDASAL's project in El Salvador, third: the MSS's project in San Salvador and fourth: CECI's project in Honduras. Except for the fact that CECI's project had a lower level than the MSS's project

in San Salvador this order corresponds to the benchmarking level of performance of the projects. *The micro-hypothesis is true.*

4.2.4. Fourth variable of the hypothesis

First variable	The level of integration and differentiation within the multi-organisation, including inserting the project in a larger program of reconstruction
Second variable:	The multi-organisation's strategic capacity to attract funding
Third variable:	The multi-organisation's capacity to share and react to the risks of the environment
Fourth variable:	**The level of user's responsibility for individual decision-making among a series of choices offered**

A. Possible relationships between the indicators of community participation (indicators of results No. 49, 50, 51, 52, 53 and 54) and the overall performance of the project (including expected and unexpected results and impacts): **The micro-hypothesis is: higher levels of performance in the indicators of community participation lead to higher overall performance of the project.**

The 'values' obtained by the four projects in relation with the six aspects of "level of community participation" are:

FUNDASAL's project in El Salvador:
-5.4 points for "design"
-5.4 points for "management"
-2.4 points for "financing of the project"
-18.0 points for "production of components"
-18.0 points for "construction"
-6.7 points for "individual decision-making"

MSS's project in San Salvador:
-0.0 points for "design"
-0.0 points for "management"
-0.0 points for "financing of the project"

	-0.0 points for "production of components"
	-7.2 points for "construction"
	-0.0 points for "individual decision-making"
CGO's project in Colombia:	-18.0 points for "design"
	-18.0 points for "management"
	-16.2 points for "financing of the project"
	-18.0 points for "production of components"
	-13.5 points for "construction"
	-18.0 points for "individual decision-making"
CECI's project in Honduras:	-0.0 points for "design"
	-0.0 points for "management"
	-0.0 points for "financing of the project"
	-18.0 points for "production of components"
	-18.0 points for "construction"
	-4.6 points for "individual decision-making"

If the projects are classified from higher to lower values we have: first: the CGOs' project in Colombia, second: FUNDASAL's project in El Salvador, third: CECI's project in Honduras and fourth: the MSS's project in San Salvador. This order corresponds to the benchmarking level of performance of the projects. *The micro-hypothesis is true*.

B. The relationship between the level of community participation in decision-making (indicator of results No. 54) and the organisation's capacity to adapt to the environment (indicator of inputs No. 6) and the overall performance of the

project: **The micro-hypothesis is: High levels of community participation in decision-making (which transfers the risk associated with acceptability to the users) increases the capacity to adapt to the environment leading to higher levels of performance.**

The 'values' obtained by the four projects in the "level of community participation in decision making" and in "organisation's capacity to adapt to the environment" are:

FUNDASAL's project in El Salvador:	-6.7 points for "individual decision-making"
	-14.4 points for "capacity to adapt to the environment."
MSS's project in San Salvador:	-0.0 points for "individual decision-making"
	-2.4 points for "capacity to adapt to the environment."
CGO's project in Colombia:	-18.0 points for "individual decision-making"
	-16.2 points for "capacity to adapt to the environment."
CECI's project in Honduras:	-4.6 points for "individual decision-making"
	-2.4 points for "capacity to adapt to the environment."

These values show that, in the projects studied here, the level of individual decision making corresponds to the level of organisational capacity to adapt to the environment, and also to the level of overall performance of the projects. *The hypothesis is true.*

4.2.5. Validation of the hypothesis

The first variable of the hypothesis (the relationship between the performance of the projects and the level of integration and differentiation within the multi-organisation, including inserting the project in a larger program of reconstruction) is validated and found *true*.

The relationship between the performance of the projects and the second variable of the hypothesis (the multi-organisation's strategic capacity to attract funding) is not validated by the cases studied here and requires careful analysis. Of course, a higher budget (more funding) has a higher potential to permit developing a better project than a small budget. Certainly, a well-established strategic plan that includes positioning the organisation in the market of international funding leads to a better capacity to attract funding (it is true for the cases studied). However, the relationship between the amount of resources obtained for the project and its performance is not a direct cause-effect relationship. Besides, it cannot be said that if the multi-organisation's capacity to attract funding is low, it is necessarily due to influences of the environment (external factors) or that a better capacity to attract funding leads to better performance of the project. Certainly, the environment plays a fundamental role in the capacity to attract funding, however, if the quantity of outputs delivered is not prioritised as a criterion of performance, a limited budget does not necessarily means a 'bad' project, because the quality of few outputs (even if the aim is just to produce a few of them) is rather dependent on the careful consideration of a complete set of 'hard' and 'soft' aspects required for recovery.

Justifying the validation of the hypothesis on the basis of the criteria of evaluation that were chosen to prove it does not mean here that the argument of the study is being manipulated in a circular manner (for example that the hypothesis is false because the method that was chosen to validate it lead to prove it false). Instead, it is the opportunity to recognise that the study is being

conducted following the principle of selection of evaluation criteria, where the evaluator is free to chose the aspects that he/she wants (or requires) to assess and that this selection of evaluation criteria is always biased by his/her deliberate selection.

It can be concluded that the second variable of the hypothesis is *false*. Besides, it is important to note that the organisational capacity to attract funding depends on a strategic attitude that needs to be implemented way before the project and not in the rush and chaos of the aftermath of the disaster.

The relationship between the performance of the projects and the third variable of the hypothesis (the multi-organisation's capacity to share and react to the risks of the environment) is validated and found *true*, but some remarks are required. It has been found that -as common sense would have predicted - the better the capacity of the organisation responsible of the project to adapt to the environment the better the performance of the project. The capacity of the organisation to understand and adapt to the environment will determine its capacity to deliver the expected results and to reduce the unexpected outcomes (particularly the negative ones). It is therefore not surprising that improved performance in the development of the management tools (targeted to reduce uncertainty) corresponds to better performance of the project. These management tools certainly reduce the possibility that risks have negative effects on the project.

However, it cannot be said that external negative factors directly affect the performance of the project (particularly the capacity to deliver the outputs), it can rather be said that external factors push organisations to make decisions that reflect in a positive or negative manner on the overall performance of projects. External factors then affect the system where the projects are developed and the decisions made within that system will ultimately determine the level of success of the project.

The relationship between the performance of the projects and the fourth variable of the hypothesis (the level of user's responsibility of individual decision-making among a series of choices offered) is validated and found *true.* It has been found that higher levels of performance reflected in the indicators of community participation (including individual decision making) correspond to higher overall performance of the project.

4.3. Analytical generalisations

Regarding the hypothesis proposed, the patterns found in the case studies can be summarised as follows:

	Variable	**patterns**
First variable	The level of integration and differentiation within the multi-organisation, including inserting the project in a larger program of reconstruction	The performance of a project is a dependent variable of the levels of integration and differentiation
Second variable:	The multi-organisation's strategic capacity to attract funding	The performance of a project is not necessarily a dependent variable of the multi-organisation's strategic capacity to attract funding. However, a well established strategic plan that includes positioning the organisation in the environment leads to better capacity to attract funding
Third variable:	The multi-organisation's capacity to share and react to the risks of the environment	The performance of a project is a dependent variable of the multi-organisation's capacity to share and react to the risks of the environment. However, external negative factors do not directly affect the performance of the project, they push organisations to make decisions that reflect in a positive or negative manner in the performance of the project

Fourth variable:	The level of user's responsibility for individual decision-making among a series of choices offered	The performance of a project is a dependent variable of the level of user's responsibility for individual decision-making among a series of choices offered

The patterns found in this study bring together and consolidate - in the particular context of post-disaster reconstruction projects - several approaches previously discussed in the field of project management. Indeed, the influence of (i) integration and differentiation, (ii) strategic planning and (iii) the environment of the projects on the overall performance of the project has been studied by many authors in the field (see chapter I, Introduction). However, the findings reported here are innovative in the field of housing development for developing countries, in particular in the field of post-disaster reconstruction (where we have no evidence of any similar study ever having been proposed).

In the field of post-disaster reconstruction, the patterns we have found confirm the relations proposed by Roberts (1972) regarding the influence of integration and differentiation on projects' performance. It can therefore be said, that as much as integration and differentiation are important variables of the performance of organisations (Lawrence,1970; Lorch and Lawrence, 1970), they are also crucial variables of the performance of multi-organisations. A clear and balanced distribution of responsibilities among the participants of the project team reduces conflict and optimises the available resources facilitating higher levels of performance (Mohsini, 1985). In the particular case of post-disaster reconstruction (where the amount and variety of outputs can hardly be provided by a single institution requiring the consolidation of some form of team to carry out the projects) the concept of inter-organisational arrangements and partnerships is crucial for the development of all the products and services required for recovery.

This study reinforces the importance of pre-disaster relations of the organisation responsible of the project with local residents for the success of post-disaster

initiatives. These relations can also be regarded as strategic organisational design decisions leading to the increase of both integration and differentiation of roles among the project team. Due to the importance of the residents' active decision making, the relations between the project's promoter and the community are fundamental for the performance of the project. This pattern we have found in our research confirms previous studies made by Jigyasu (2002), Jayaraj (2002) and Sivaji (2002), among others. However, we take a step forward here to highlight that this relation (creating partnership and sustained arrangements with local residents) is not only a tactical approach but rather a well known strategic approach in the project management field to reduce risks, mostly the risks associated with the acceptance of the products that result from the project.

The study also permits us to issue an important warning: not to forget that community participation needs to go beyond the involvement of residents simply in sweat equity. The real effects of community participation (as demonstrated in the case studies) lie in allocation to members of the community of an appropriate level of responsibility over decision-making concerning several of the aspects of the project (as proposed by Da Silva, 1980): design, management, financing, production of components and construction.

The case studies also highlight the increased influence of risks on international projects of construction, a notion that has been largely studied by Langford and Male (2001). Basic notions of risk analysis and risk management, as previously studied by the Project Management Institute (1996) prove to be fundamental in the case of post-disaster reconstruction. In this regard, traditional approaches frequently discussed in the building industry, such as partnering (as discussed by Black et al., 2000), are highly pertinent in the analysis of performance of reconstruction projects.

The difficulties and obstacles found in post-disaster resettlement (as frequently argued by UNDRO, 1982) are demonstrated in the case of Nueva Choluteca. This project becomes a paradigmatic example of the disadvantages of resettlement as identified by UNDRO (see section 1.7.3, page 39), including difficulties in the provision and maintenance of infrastructure, the creation of ghettos, and environmental degradation. It can be said that the performance of the project in Nueva Choluteca reinforces the pattern previously identified by UNDRO regarding the consequences of the relocation of residents.

Basic concepts of multi-organisational design as discussed by Mohsini (1985) (who wrote: "the performance of a project is not merely a function of input resources, but instead of the state of collaboration which exists among the project team members in fulfilling their tasks") take full meaning in the case studies presented here. Similarly, the notion developed by Abdel Meguid (1997) (which builds up on the work conducted by Mohsini, 1985; Roberts,1972 and Haviland, 1984) to the effect that "maximising the overall project performance means a high level of coordinated decision making, which in turns means attaining the lowest possible level of inter-organisational conflict (i.e. conflict between participating task-organisations)" is confirmed with the empirical research conducted here.

In summary, this research has demonstrated that the previous work conducted by Roberts (1972), Katsanis (1998), Mohsini (1985), Haviland (1984), Davidson and Abdel Meguid (1997) about the characteristics of projects in the general building industry finds an important field of application in the case of post-disaster housing reconstruction.

The patterns found in the research contradict the general and widely accepted argument about the performance of a post-disaster reconstruction project as a dependent variable of the level of participation of the local community, and particularly of its participation in self-help construction. The patterns suggest that

a systems approach to the 'problem' of performance permits a better understanding of the real factors that significantly influence the success of reconstruction projects.

4.4. Contribution

The major contribution of this research lies in the fact that it disturbs the traditional discourse towards the improvement of the performance of reconstruction projects. This study demonstrates that it is necessary to distance oneself from the discussion about tactical aspects of the projects (self-help or no self-help, local technologies or imported ones, users' labor force or hired labor, etc.) and that it is necessary to see the project as **a system** where the organisational design, the management aspects and the environment play a fundamental role.

This study also challenges the traditional myth that exists in the field of post-disaster reconstruction regarding the use of sweat equity as a source of success:

"The key to success ultimately lies in the participation of the local community – the survivors – in reconstruction" UNDRO claimed in 1982.

This study has shown four projects in which self-help has been implemented (or has been attempted to be implemented) and yet the four projects have totally different levels of performance because, as we have shown, the performance ultimately does NOT lie significantly in the participation of the local community in reconstruction, it lies in a series of aspects that go beyond the tactical decisions related uniquely to one single project.

Breaking this myth also means understanding a post-disaster reconstruction project as a system where local and external resources play a fundamental role.

In this systems approach, extreme positions towards the use of local resources lose their meaning. Consequently, the widely accepted myths of so-called best practice in post-disaster reconstruction need to be re-evaluated; this includes re-formulating the principles of 'best practice' proposed by Annie Jayaraj (2002) that suggest that "the labour intensive technology should be encouraged and mechanisation of construction and labour displacing technology should be opposed and discouraged [and the projects] should encourage and make use of the materials produced by village industries and rural artisans" (the complete principles proposed by Jayaraj are already quoted in Chapter I, page 22)

It is also an important contribution to remark that the performance of reconstruction projects depends less of the aspects related with the organisation's role as a 'builder' and more of the aspects related with the organisation's role as a 'promoter'. These aspects include positioning the organisation in the environment, attracting resources, creating an appropriate multi-organisation, establishing appropriate links, and so on.

A remarkable contribution to the field of project evaluation has been proposed here with the development of an improved method of performance assessment that builds up on the methods that were previously used in international development and the building industry. This improved tool still requires further development and testing. However, it already shows its advantages as an easy-to-use method for practitioners and researchers. Most of the crucial opportunities and limitations of project evaluation have been analysed here, and even though this research project is constrained by the limitations of the methods used, it gives reliable information about the deliberate decisions that were made while conducting the study. This information permits further researchers to contribute to the methods proposed here (including correcting and improving them).

Refined definitions for basic concepts such as 'reconstruction' and 'vulnerability' are proposed here; these definitions are based on internationally agreed terms but they are taken a step forward to make their dimension and meaning in the particular field of housing reconstruction more precise. Also, bringing to the field of post-disaster reconstruction the notions of self-help proposed by Da Silva (1980) attempts to contribute a further dimension to the discussion of post-disaster housing delivery in developing countries. This study suggests that much more research is needed regarding the concept of procurement in the field of post-disaster reconstruction. Further research is required to identify and to create models of the procurement strategies used in reconstruction.

Finally, this research also highlights the fragility of low-cost housing projects in the reconstruction situation, a situation where chaos and disruption coincide with the need for speed of reaction and the need of maximum effectiveness regarding decision-making. In this unusual scenario, (that pushes the problems of organisation and planning to their maximum limit of complexity) basic notions of project management are crucial, yet they are very often underestimated or neglected. Of course, the technological choice and optimisation of resources are important for every project; however, a careful organisational design and up-front strategic planning prove to be even more fundamental for the success of post-disaster housing reconstruction in developing countries.

Annex 1

Guide to open interviews with residents

1. During the reconstruction of your house did you - or your family - participate in... (please comment about each point):

- Defining the construction site
  If yes: Were you free to decide to relocate or to change the location of your house?
- The design of the house
  If yes: Were you free to decide the type of house (the layout) you wanted
- The management of the construction
  If yes: Were you able to adapt the house to your particular needs
- The financing of the project
  If yes: Were you free to decide the type of financing you received
- The creation of construction components
  If yes: Were you free to decide the finishes and materials for your house
- The construction itself
  If yes: How did you participate? What did you do?

2. Who was responsible for giving you a house after the disaster? (please comment)

The government? The NGO in charge? Individual donors? Your family?

3. How long after the disaster did you have your house finished?
What is or was missing?

4. Was your opinion consulted when defining the following.... (please comment about each item):

- The type of help you should receive
- The amount of money/ resources you were to receive
- The size of your reconstructed house
- The color of your house
- The type of washroom you wanted

5. What products and services were offered? Which ones did you receive?

6. Did you hire labor force for construction?

Guide to open interviews with officers responsible of the project

1. During the reconstruction project did the residents participate in… (please comment about each aspect):

- Defining the construction site
- The design of the house
- The management of the construction
- The financing of the project
- The creation of construction components
- The construction itself

2. Did they have active decision-making in (were they free to do the following activities?)? (please comment):

Deciding the type of house (the layout) they wanted
Deciding the finishes and materials for their house
Adapting the house to their particular needs
The type of financing they received
Deciding to relocate or change the location of their house

3. Who was responsible for giving them a house after the disaster (please comment)?

The government? The NGO in charge? Individual donors? Each family?

4. How did you consult the opinion of residents?

5. Was their opinion consulted when defining the following?

The type of help they should receive
The amount of money/ resources they were to receive
The size of their reconstructed houses
The color of their houses
The type of washroom they wanted

6. Were the administrative costs of the project high? How can they be reduced in a following experience?

7. Please comment about the partnerships or relations with other institutions/companies/NGOs

8. Who (which organisation) was doing what in the project?

9. How did you organise your employees and departments to develop the project?

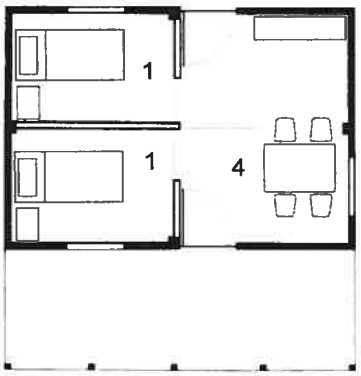
10. How was the process to select the beneficiaries?

11. What products and services were offered to the community?

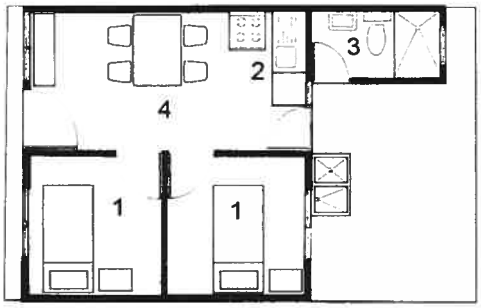
12. Please comment on the following:
efficiency: were the local and external resources optimised?
results: were the targeted outputs attained?
timing: were the outputs available at the right time?
the quality of the product: is the product good in the environment it is going to be used?
pertinence: were the outputs available to the right people?
acceptability: did the local community use the outputs/ services offered?
strategy: did the outputs offered correspond to the needs of the population?
coverage: how much of the real needs was covered? Is that percentage satisfactory?
impacts/objectives: did the project reduce the vulnerabilities of the population?
external aspects: how did the environment affect the results of the project?

13. Please comment on the overall performance of the project

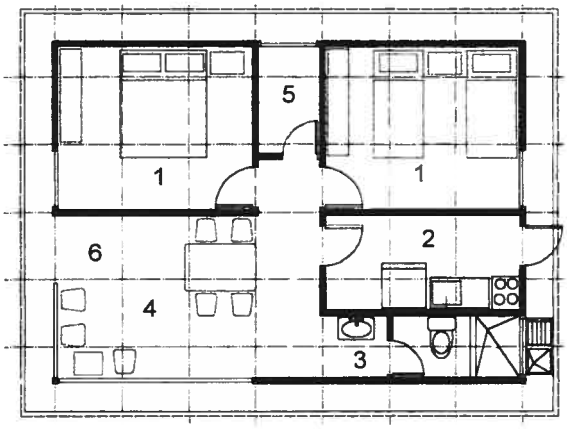
Annex 2, Plans of the houses of the projects



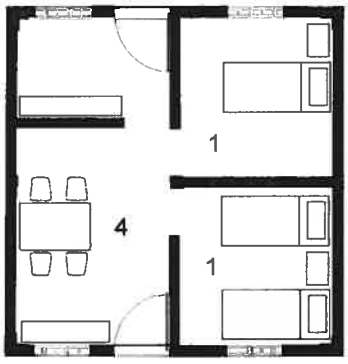
Case Study 1.
2001 earthquake, El Salvador, organisation: FUNDASAL.
Plan of the houses that were built (the veranda is a possible future addition)



Case Study 2.
2001 earthquake, San Salvador, organisation: Municipality of San Salvador.
Plan of the houses that were expected to be built



Case Study 3.
1999 earthquake, Colombia, organisation: CGOs.
Model of one of the houses promoted in the housing exhibition



Legend:

1. Bedroom
2. Finished kitchen
3. Finished W.C.
4. Living room
5. Storage room
6. Finished veranda

Case Study 4.
1998 after Mitch, Choluteca, Honduras, organisation: CECI.
Plan of the houses that were built

* All the plans at the same scale. Drawn from the plans given by the organisations responsible of the projects

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Université de Montréal

ORGANISATIONAL SYSTEM AND PERFORMANCE OF POST-DISASTER RECONSTRUCTION PROJECTS

par

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Faculté de l'Aménagement

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VOLUME 2

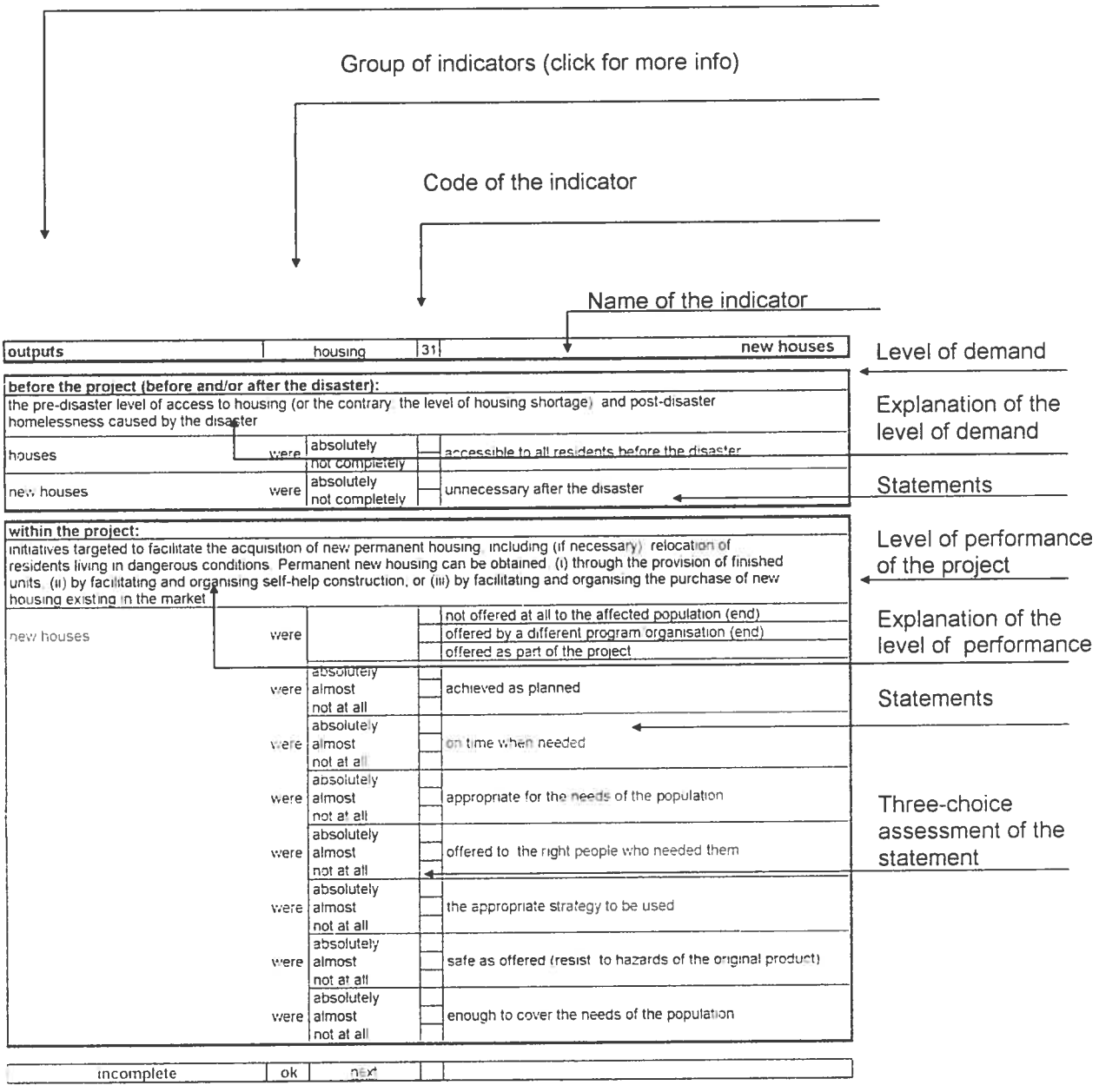
Organisational system and performance of post-disaster reconstruction projects

Gonzalo Lizarralde

Appendix 3: Forms of Indicators of Performance (FIPs)

NOTE: All the FIPs for the four case studies are included in the CD. The FIPs were prepared in Excell Mac version; therefore, the font size and type may change if opened in MS Excell - for PCs. Please adjust the font size and type if necessary.

Type of indicator in the model (in the computer, click here to obtain more information)



Typical FIP

FIPs of FUNDASAL's project in El Salvador

inputs	multi organisation	1	the capacity to attract funds for the project

before the project (before and/or after the disaster):

n/a

within the project:

capacity to obtain donations and/or financing. It assesses the amount of resources obtained vs. the initial estimation and budget

the capacity to attract funds	absolutely	x	permitted to collect the funds required according to the initial estimations
	almost		
	not at all		
	absolutely	x	permitted to get on time the funds that were required
	almost		
	not at all		
	absolutely	x	guaranteed a continuous investment of resources
	almost		
	not at all		
	absolutely		permitted to target an appropriate level of quality in the outputs offered
	almost	x	
	not at all		
	absolutely		permitted to deal with a complete series of outputs
	almost	x	
	not at all		
	absolutely	x	permitted the organisation an adequate independence of decision making
	almost		
	not at all		

complete	ok	next		

next

inputs	multi organisation	2	level of integration with the community

before the project (before and/or after the disaster):

n/a

within the project:

directly related with the definition of integration used here. Includes the capacity of the organisation to develop horizontal relations with members of the community, beneficiaries and grass roots organisations in order to accomplish common objectives

local residents	absolutely	x	had an active participation within the multi-organisation
	almost		
	not at all		
local associations	absolutely		had an active participation within the multi-organisation
	almost	x	
	not at all		
local authorities	absolutely	x	had an active participation within the multi-organisation
	almost		
	not at all		
grass-roots NGOs	absolutely		had an active participation within the multi-organisation
	almost		
	not at all	x	
local contractors	absolutely	x	had an active participation within the multi-organisation
	almost		
	not at all		
the organis. in charge of the project had	completely	x	established relations in the region before the beginning of the project
	partially		
	not		

complete	ok	next		

inputs	multi organisation	3	level of integration between organisations

before the project (before and/or after the disaster):

n/a

within the project:

directly related with the definition of integration used here. Includes the capacity of the organisation to develop horizontal and vertical relations with banks, NGOs, private companies, etc. in order to accomplish and reinforce common objectives

individual objectives of each organis.	were	absolutely almost not at all	 x 	coordinated to achieve a common objective
the organisation in charge of the project	had	enough almost enough not enough	 x	links with other organis. to work together towards a common objective
integration with other organisations		absolutely almost not at all	 x 	resulted in appropriate cooperation
integration with other organisations		absolutely almost not at all	 x 	facilitated collecting funds and obtaining financing
the relations between the organisations	were	absolutely almost not at all	 x 	consolidated when needed

complete	ok	next		

inputs	multi organisation	4	level of differentiation between organisations

before the project (before and/or after the disaster):

n/a

within the project:

based on the assessment of corporate performance as proposed by Lawrence and Lorsh. Includes the assessment of the level of definition of different roles among the organisations of the project team. The performance decreases if activities made by different organisations overlapped incurring in redundancy, too much assistance, or repetition

the differentiation of responsibilities	was	absolutely	x	defined in a clear manner
		almost		
		not at all		
the differentiation of responsibilities		never	x	overlapped incurring in repetition and redundancy
		sometimes		
		always		
the differentiation of responsibilities		absolutely	x	took advantage of the strengths and weaknesses of each organisation
		almost		
		not at all		
the differentiation of responsibilities		absolutely		contributed to attain a common objective
		almost	x	
		not at all		
the differentiation of responsibilities	was	absolutely	x	set up when needed
		almost		
		not at all		

complete	ok	next		

inputs	multi organisation	5	project's administrative costs

before the project (before and/or after the disaster):

n/a

within the project:

the level of optimization of economic resources for the benefit of beneficiaries. Assessed as a the percentage of the project's budget. Lower administrative costs = better performance

project's administrative costs	were	absolutely	x	reduced through the optimisation of local resources
		almost		
		not at all		
	were	absolutely	x	reduced by minimising the costs of expatriate officers
		almost		
		not at all		
	were	absolutely	x	justified by having reduced overall costs for the project
		almost		
		not at all		
		absolutely	x	favored the maximum use of money for the benefit of beneficiaries
		almost		
		not at all		

complete	ok	next		

inputs	multi organisation	6	the capacity of the system to adapt to the environm.

before the project (before and/or after the disaster):
n/a

within the project:				
the capacity to react to the risks and opportunities of the environment at the social, economic and political levels. Includes an assessment of the influence of the environment in the objectives targeted by the multi-organisation				
the objectives of the project	were	not at all somehow greatly	x	affected by negative unexpected changes of the environment
the risks inherent to the environment	were	absolutely almost not at all	x	assessed by the multi-organisation during the project
the organis. responsible of the project		absolutely almost not at all	x	anticipated a plan to minimise (share) financial risks
the organis. responsible of the project		absolutely almost not at all	x	took advantage of unexpected opportunities in the environment
when required, changes in the project	were	absolutely almost not at all	x	implemented
the organi. responsible of the project	was	absolutely almost not at all	x	prepared to work in a hostile environment

complete	ok	next		

inputs	management tools	7	a census of local residents

before the project (before and/or after the disaster):

n/a

within the project:

dams, barriers and retaining walls built to protect housing from natural hazards (landslides, floods, fires, etc). Safe conditions and reduction of risks for the population are assessed in this indicator

a census of local residents	was			not conducted (end)
				conducted by a different program/organisation (end)
			x	conducted as part of the project
	was	absolutely	x	inclusive of diversity and everybody in the community
		almost		
		not at all		
	was	absolutely		conducted and used on time
		almost	x	
		not at all		
	was	absolutely	x	used to adapt the project to the real needs of the population
		almost		
		not at all		
	was	absolutely		the appropriate strategy (management tool) to use
		almost	x	
		not at all		

complete	ok	next		

inputs	management tools	8	previous studies (typologies, techniques, etc)

before the project (before and/or after the disaster):

n/a

within the project:

pre-project technical studies (pre- or post-disaster) to collect information about local living conditions, architectural typologies, construction techniques, etc.

previous studies (typologies, techniques, etc)	were			not conducted (end)
				conducted by a different program/organisation (end)
			x	conducted as part of the project
	were	absolutely	x	useful to discover new information about local characteristics
		almost		
		not at all		
	were	absolutely		conducted and used on time
		almost	x	
		not at all		
	were	absolutely	x	used to adapt the project to local characteristics
		almost		
		not at all		
	were	absolutely	x	properly reported or published for future reference
		almost		
		not at all		
	were	absolutely	x	the appropriate strategy (management tool) to use
		almost		
		not at all		

complete	ok	next		

inputs	management tools	9	surveys of people's needs

before the project (before and/or after the disaster):

n/a

within the project:

post-disaster assessment of damages and real needs (through questionnaires, visits, meetings with the community, etc.)

surveys of people's needs	were			not conducted (end)
				conducted by a different program/organisation (end)
			x	conducted as part of the project
	were	absolutely		useful to reveal new information about residents expectations
		almost	x	
		not at all		
	were	absolutely		conducted and used on time
		almost	x	
		not at all		
	were	absolutely		used to adapt the project to real needs
		almost	x	
		not at all		
	were	absolutely	x	properly reported or published for future reference
		almost		
		not at all		
	were	absolutely	x	the appropriate strategy (management tool) to use
		almost		
		not at all		

complete	ok	next		

inputs	management tools	10	consultation with the community

before the project (before and/or after the disaster):

n/a

within the project:

assessment of the users' opinions and suggestions regarding living conditions, expectations, and requirements

consultation with the community	was			not conducted (end)
				conducted by a different program/organisation (end)
			x	conducted as part of the project
		absolutely		contributed in the beginning to set up the priorities of the project
		almost	x	
		not at all		
		absolutely		permitted to make changes and adapt the project during the process
		almost	x	
		not at all		
		absolutely	x	enhanced diversity and multiplicity
		almost		
		not at all		
		absolutely		permitted a fair representation of all the residents
		almost	x	
		not at all		
	was			intended to design the project
				intended to adapt the existing project
			x	intended to present the project to residents

complete	ok	next		

inputs	local resources	11	the capacity of residents to work in construction

before the project (before and/or after the disaster):

n/a

within the project:

indicates availability of time, knowledge and interest to work in construction. It assesses the users' availability of time to work in construction; users' skills and know how in building practices; and users' interest to invest their time and expertise in construction

beneficiaries of the project	had	sufficient		knowledge about construction practices
		relative	x	
		insufficient		
	had	sufficient		availability of time to work in construction
		relative	x	
		insufficient		
	had	sufficient	x	interest to work in construction activities
		relative		
		insufficient		
	had	sufficient	x	guidance to work in construction activities
		relative		
		insufficient		
	had	sufficient	x	physical conditions to work in construction activities
		relative		
		insufficient		

complete	ok	next		

inputs	local resources	12	materials and equipment available

before the project (before and/or after the disaster):
n/a

within the project:				
the capacity to use indigenous materials (wood, sand, earth, palm leaves, bamboo, clay, etc.) for the production of construction components and the availability of tools and equipment for construction				
local indigenous materials	were	absolutely	x	available in the region
		almost		
		not at all		
		absolutely	x	corresponded to the skills of the affected population
		almost		
		not at all		
	were	absolutely	x	safe for the environment (preventing degradation of natural resources)
		almost		
		not at all		
tools and equipment	were	absolutely	x	available in the region
		almost		
		not at all		
		absolutely	x	corresponded to the skills of the affected population
		almost		
		not at all		

complete	ok	next		

outputs	financial / funding	13	tax incentives for companies / individuals

before the project (before and/or after the disaster):

n/a

within the project:

the implementation of tax incentives to attract investment and economic recovery after the disaster. Tax incentives are targeted to promote the creation of employement opportunties, new businesses and the development of local industries. Equally, tax incentives to individuals during a certain period of time ease the financial burden of recovery of the affecetd families

tax incentives	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely almost not at all		achieved as planned
	were	absolutely almost not at all		on time when needed
	were	absolutely almost not at all		appropriate for the needs of the population
	were	absolutely almost not at all		offered to the right people who needed them
	were	absolutely almost not at all		the appropriate strategy to be used
	were	absolutely almost not at all		enough to cover the needs of the population

incomplete	ok	next		

outputs	financial / funding	14	loans for housing

before the project (before and/or after the disaster):

pre-disaster capacity of local residents to have access to banking loans and mortgages for housing

loans for housing	were	widely		accessible to residents before the project
		not widely	x	
	were	absolutely		appropriate for the needs of the population
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

the implementation of loans for repairs, self-help initiatives or buying a new house. This indicator denotes the confidence of the financial system in the affected community and the capacity of the users to enter into the regular banking system

loans for housing	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	financial / funding	15	subsidies for housing

before the project (before and/or after the disaster):

pre-disaster capacity of local residents to have access to governmental subsidies for housing

subsidies for housing	were	widely		accessible to residents before the project
		not widely	x	
	were	absolutely		appropriate for the needs of the population
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

non-reimbursable financial aid for repairs, purchase of a new house or self-help

subsidies for housing	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	financial / funding	16	loans for infrastructure or others

before the project (before and/or after the disaster):

pre-disaster capacity of local residents to have access to regular loans for individual or familial investment

loans for infrastructure or others	were	widely		accessible to residents before the project
		not widely	x	
	were	absolutely		appropriate for the needs of the population
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

loans for infrastructure repair, for buildings related with sources of income (for individual shops, small industries, etc), or other initiatives for recovery. This indicator denotes the confidence of the financial system in the affected community and the capacity of the users to enter into the regular banking system

loans for infrastructure or others	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	financial / funding	17	subsidies for infrastructure or others

before the project (before and/or after the disaster):

pre-disaster capacity of local residents to have access to governmental subsidies for individual or familial investment

subsidies for infrastructure or others	were	widely		accessible to residents before the project
		not widely	x	
	were	absolutely		appropriate for the needs of the population
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

non-reimbursable financial aid for infrastructure repair, for buildings related with sources of income (for individual shops, small industries, etc), or for other initiatives for recovery

subsidies for infrastructure or others	were			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely	x	achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost	x	
		not at all		
	were	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely	x	offered to the right people who needed them
		almost		
		not at all		
	were	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all	x	

complete	ok	next		

outputs	infrastructure	18	dams, barriers, retaining walls

before the project (before and/or after the disaster):				
assesses if dams, barriers and retaining walls existed to protect housing from natural hazards (landslides, floods, fires, etc) and if this infrastructure guaranteed security and did not represent risks for the population				
dams, barriers, retaining walls	were	absolutely		safe to protect residents before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely		functional after the disaster
		not completely	x	

within the project:				
dams, barriers and retaining walls built to protect housing from natural hazards (landslides, floods, fires, etc). Safe conditions and reduction of risks for the population are assessed in this indicator				
dams, barriers, retaining walls	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe to protect residents
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	infrastructure	19	roads

before the project (before and/or after the disaster):

assesses if roads (urban or rural) were appropriate and enough to cover the needs of housing in the community and the risks that they might represent for the population. It also assesses the damages in roads caused by the disaster

roads	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely	x	safe in case of emergency and danger
		not completely		
	were	absolutely	x	functional after the disaster
		not completely		

within the project:

the performance in the construction of roads. The indicator applies at two levels: public infrastructure (for the benefit of the community) and individual infrastructure (in private property for the benefit of its owners). Individual infrastructure includes the activities and construction required for the connection to public services. These indicators illustrate the sustainability of the project and the consideration of long term effects in public health and safety

roads	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe in case of emergency and danger
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	infrastructure	20	water supply

before the project (before and/or after the disaster):

assesses if water supply was appropriate and enough to cover the needs of housing in the community and the risks that it might represent for the population. It also assesses the damages caused by the disaster

water supply infrastructure	was	absolutely not completely	x	appropriate for the context before the project
	was	absolutely not completely	x	enough to cover the needs of the population
	was	absolutely not completely	x	safe for public health
	was	absolutely not completely	x	functional after the disaster

within the project:

the performance in the construction of water supply infrastructure. The indicator applies at two levels: public infrastructure (for the benefit of the community) and individual infrastructure (in private property for the benefit of its owners). Individual infrastructure includes the activities and construction required for the connection to public services. These indicators illustrate the sustainability of the project and the consideration of long term effects in public health and safety

water supply infrastructure	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		safe for public health
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	infrastructure	21	electricity

before the project (before and/or after the disaster):

assesses if electricicty supply was appropriate and enough to cover the needs of housing in the community and the risks that it might represent for the population. It also assesses the damages caused by the disaster

electricity infrastructure	was	absolutely		appropriate for the context before the project
		not completely	x	
	was	absolutely		enough to cover the needs of the population
		not completely	x	
	was	absolutely		safe considering local codes
		not completely	x	
	was	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of infrastructure for electricity supply. The indicator applies at two levels: public infrastructure (for the benefit of the community) and individual infrastructure (in private property for the benefit of its owners). Individual infrastructure includes the activities and construction required for the connection to public services. These indicators illustrate the sustainability of the project and the consideration of long term effects in public health and safety

electricity infrastructure	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		safe considering local codes
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	infrastructure	22	sewage

before the project (before and/or after the disaster):

assesses if the sewage system was appropriate and enough to cover the needs of housing in the community and the risks that it might represent for the population. It also assesses the damages caused by the disaster

sewage infrastructure	was	absolutely		appropriate for the context before the project
		not completely	x	
	was	absolutely		enough to cover the needs of the population
		not completely	x	
	was	absolutely		safe for public health
		not completely	x	
	was	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of sewage infrastructure. The indicator applies at two levels: public infrastructure (for the benefit of the community) and individual infrastructure (in private property for the benefit of its owners). Individual infrastructure includes the activities and construction required for the connection to public services. These indicators illustrate the sustainability of the project and the consideration of long term effects in public health and safety

sewage infrastructure	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		safe for public health
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	infrastructure	23	telephone

before the project (before and/or after the disaster):

assesses if the infrastructure for telephone system was appropriate and enough to cover the needs of housing in the community. It also assesses the damages caused by the disaster

infrastructure for telephone	was	absolutely		appropriate for the context before the project
		not completely	x	
	was	absolutely		enough to cover the needs of the population
		not completely	x	
	was	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of infrastructure for telephone systems. The indicator applies at two levels: public infrastructure (for the benefit of the community) and individual infrastructure (in private property for the benefit of its owners). Individual infrastructure includes the activities and construction required for the connection to public services. These indicators illustrate the sustainability of the project and the consideration of long term effects in public health and safety

infrastructure for telephone	was		x	not offered at all to the affected populatcn (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	community services	24	schools

before the project (before and/or after the disaster):				
pre-project conditions of facilities				
schools	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely		safe (resistance to hazards)
		not completely	x	
	were	absolutely		functional after the disaster
		not completely	x	

within the project:				
the performance in the construction of facilities				
schools	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	community services	25	health centers

before the project (before and/or after the disaster):

pre-project conditions of facilities

health centers	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely		safe (resistance to hazards)
		not completely	x	
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of facilities

health centers	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	community services	26	community centers / religious bldg.

before the project (before and/or after the disaster):

pre-project conditions of facilities

community centers / religious bldg.	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely		safe (resistance to hazards)
		not completely	x	
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of facilities

community centers / religious bldg.	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	community services	27	police / fire stations

before the project (before and/or after the disaster):

pre-project conditions of facilities

police / fire stations	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely		safe (resistance to hazards)
		not completely	x	
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of facilities

police / fire stations	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	housing	28	new lots

before the project (before and/or after the disaster):

the pre-disaster level of access to land property; and/or pre- and post-disaster risks associated with the tenure of land, particularly due to location in zones of risk

lots	were	absolutely		appropriate for the context before the project
		not completely	x	
land tenure	was	absolutely		enough to cover the needs of the population
		not completely	x	
land	was	absolutely		safe (resistance to hazards)
		not completely	x	
land tenure	was	widely		accessible to residents
		not widely	x	

within the project:

initiatives targeted to increase the residents' capacity to acquire safe lots for housing; including loans or subsidies given for purchasing land or the direct donation of lots

new lots	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	housing	29	emergency shelters

before the project (before and/or after the disaster):

pre-disaster arrangements and planning made by the organisations to adequately respond to the emergency. It represents the access of the community to contingency plans by the civil defense, fire departments, Red Cross, etc.

emergency shelters	were	absolutely		planned, before the disaster, through contingency plans
		not completely	x	
emergency organisations	were	absolutely		prepared for a housing emergency
		not completely	x	
authorities	were	absolutely		prepared for a housing emergency
		not completely	x	
info about contingency plans	was	widely		accessible to residents before the disaster
		not widely	x	

within the project:

implementation of an emergency sheltering plan; including provision of tents, plastics or other materials to build shelters for the first days after the disaster

emergency shelters	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe to short-term protection of residents
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	housing	30	temporary housing

before the project (before and/or after the disaster):

pre-disaster arrangements and planning made by authorities and local NGOs to adequately respond to the requireness for transitory housing

temporary housing	was	absolutely not completely	x	planned, before the disaster in urban plans
emergency organisations	were	absolutely not completely	x	prepared for building transitory housing
authorities	were	absolutely not completely	x	prepared for building transitory housing
info about temporary housing plans	was	widely not widely	x	accessible to residents before the disaster

within the project:

this might include the implementation of: (i) temporary units (i.e. pre-fab and winterised units); (ii) adapted temporary housing (public facilities or rented apartments); or (iii) self-provided temporary housing (homes of families / friends, user-built shelters, or second homes)

temporary housing	was			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely		achieved as planned
		almost	x	
		not at all		
	were	absolutely		on time when needed
		almost	x	
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all	x	
	were	absolutely	x	offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all	x	
	were	absolutely		safe for mid-term protection of residents
		almost		
		not at all	x	
	were	absolutely		enough to cover the needs of the population
		almost	x	
		not at all		

complete	ok	next		

outputs	housing	31	new houses

before the project (before and/or after the disaster):

the pre-disaster level of access to housing (or the contrary: the level of housing shortage) and post-disaster homelessness caused by the disaster

houses	were	absolutely		accessible to all residents before the disaster
		not completely	x	
new houses	were	absolutely		unnecessary after the disaster
		not completely	x	

within the project:

initiatives targeted to facilitate the acquisition of new permanent housing, including (if necessary) relocation of residents living in dangerous conditions. Permanent new housing can be obtained: (i) through the provision of finished units; (ii) by facilitating and organising self-help construction; or (iii) by facilitating and organising the purchase of new housing existing in the market

new houses	were			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely	x	achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost	x	
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost	x	
		not at all		
	were	absolutely	x	offered to the right people who needed them
		almost		
		not at all		
	were	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely	x	safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely	x	enough to cover the needs of the population
		almost		
		not at all		

complete	ok	next		

outputs	housing	32	reconstructed houses

before the project (before and/or after the disaster):

the pre- and post-disaster risks of collapse of housing structures due to one or some of the following reasons: (i) lack of maintenance; (ii) use of inadequate materials; (iii) use of inadequate technologies; (iv) unsafe additions and structural modifications to housing; (v) insufficient construction codes and standards

houses	were	absolutely		functional after the disaster
		not completely	x	
	were	absolutely		appropriate for the needs of the population
		not completely	x	
	were	absolutely		safe after the disaster
		not completely	x	

within the project:

the reconstruction of affected structures, including minor repairs and major reconstruction

the reconstruction of affected houses	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		safe for long-term protection of residents
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	industry /employm.	33	bldgs/infras. for industry & income generation

before the project (before and/or after the disaster):

the pre-disaster level of access to sources of income; and/or pre- and post-disaster risks associated with the buildings and infrastructure related with income generation, particularly the risks of collapse, destruction of infrastructure, destruction of plantations, machinery or equipment, etc.

bldgs/infras. for industry & income generation	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	widely		accessible to residents
		not widely	x	
	were	absolutely		safe (resistance to hazards)
		not completely	x	
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

the construction of buildings and infrastructure associated with the generation of income and employment at the scale of single families or small clusters (excluding the reconstruction of large industries/companies). It might include the reconstruction of shops, small industries, small scale infrastructure for production, processing or agriculture activities, etc., assessing the consideration of long-term needs for economic recovery, the capacity of the community to become economically independent, and in general, the sustainability of the project. Only physical construction is considered, not including functioning and management of facilities

bldgs/infras. for industry & income generation	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	industry /employm.	34	unemployment subsidies

before the project (before and/or after the disaster):

pre-disaster access to regular governmental unemployment subsidies (equivalent to welfare)

unemployment subsidies	were	widely		accessible to residents
		not widely	x	
	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

initiatives targeted to the implementation of subsidies for people that have lost their jobs or sources of income during the disaster. This indicator denotes the consideration of short-term needs for economic recovery

unemployment subsidies	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	others	35	rescue

before the project (before and/or after the disaster):

the pre-disaster capacity of local institutions (the civil defense, the police, the army, the local NGOs, the local Red Cross, etc.) to speedily and effectively react to the destruction

local organisations	were	absolutely		on time to conduct emergency and rescue
		not completely	x	
		absolutely		effectively conducted contingency and rescue
		not completely	x	
external aid	was	absolutely		unnecessary for rescue activities
		not completely	x	

within the project:

the implementation of rescue activities

rescue activities	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	others	36	psychological aid

before the project (before and/or after the disaster):

pre-disaster access to psychological aid. Even though this is a difficult aspect to identify in urban contexts it is easier to identify as being absent in most of rural contexts

psychological aid	was	widely		accessible to residents
		not widely	x	
	was	absolutely		appropriate for the needs of the population
		not completely	x	
	was	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

initiatives targeted to provide psychological aid to the affected residents. This might include individual or group therapies, giving advice and information in newspapers or magazines

psychological aid	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	others	37	food

before the project (before and/or after the disaster):

pre-disaster access to food, it highlights pre-disaster and post-disaster levels of malnutrition

food	was	absolutely		accessible to residents
		not completely	x	
	was	absolutely	x	appropriate for the needs of the population
		not completely		
	was	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

initiatives targeted to provide food to the affected residents in the first days after the disaster.

food	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	others	38	medical aid

before the project (before and/or after the disaster):

pre- and post-disaster level of access to regular medical care. This vulnerability might consider the availability of health centers in the region and a qualitative assessment of the capacity of residents to gain access to health insurances

medical aid	was	widely		accessible to residents
		not widely	x	
	was	absolutely	x	appropriate for the needs of the population
		not completely		
	was	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

initiatives targeted to the provision of medical assistance in the first days after the disaster

medical aid	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	others	39	temporary infrastructure

before the project (before and/or after the disaster):

the capacity of institutions to react to the destruction of public services and infrastructure, particularly the reaction of governmental organizations in charge of public services and roads

temporary infrastructure	was	absolutely		planned in contingency plans
		not completely	x	
local organisations	were	absolutely		prepared to react to the destruction of infrastructure
		not completely	x	
external aid	was	absolutely		unnecessary after the disaster
		not completely	x	

within the project:

initiatives targeted to the implementation of temporary electrical and telephone systems, temporary water supply, and temporary bridges, dams or any other infrastructure required to guarantee the safety and recovery of residents. This indicator assesses the capacity of residents to quickly resume daily activities

temporary infrastructure	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	others	40	education and technical assistance

before the project (before and/or after the disaster):

pre-disaster access to technical education and knowledge. It might include assessing the average access to schooling and informal education in the region

schooling (up to secondary)	was	widely		accessible to residents
		not widely	x	
residents	had	complete		knowledge about construction -related subjects
		insufficient	x	
technical courses and informal education	were	widely		accessible to residents
		not widely	x	

within the project:

the implementation of plans for education and technical assistance. It might include education in disaster prevention, education in better construction practices, formation on leadership, equity, human rights, protection of the environment, etc. and technical assistance for developing better construction practices or for the assembly of construction components

education and technical assistance	was			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	was	absolutely	x	achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost	x	
		not at all		
	was	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely	x	offered to the right people who needed it
		almost		
		not at all		
	was	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely	x	enough to cover the needs of the population
		almost		
		not at all		

complete	ok	next		

outputs	others	41	information

before the project (before and/or after the disaster):

pre-disaster access to information related with risks, awareness, contingency and coping activities. It might include assessing the average access to the media (news papers, internet, TV and radio), the existence of campaigns of information and the access to local and external publications

information concerning risks, awareness, etc.	was	widely		accessible to residents
		not widely	x	
campaigns of information to the public	were	widely		used in the region
		not widely	x	
residents	had	widely		access to the media in general
		not widely	x	

within the project:

the implementation of plans for dissemination of information and knowledge regarding the disaster or the reconstruction activities. It might include publications, meetings with the community and information through the media to inform about the causes and effects of the disaster, the projects in action, how to access to the benefits of the project, how to find a job, etc.

information	was			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	was	absolutely	x	achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost	x	
		not at all		
	was	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely	x	offered to the right people who needed it
		almost		
		not at all		
	was	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely	x	enough to cover the needs of the population
		almost		
		not at all		

complete	ok	next		

results	transfer	42	loans given and subsidies allocated

before the project (before and/or after the disaster):

n/a

within the project:

the performance in the transfer of financial solutions and funding, being useful to identify if the money finally reached the beneficiaries

loans and subsidies offered	were	absolutely		allocated as planned
		almost	x	
		not at all		
	were	absolutely		used at an appropriate time (as assumed)
		almost	x	
		not at all		
	were	absolutely	x	used in the appropriate way (as assumed)
		almost		
		not at all		
	were	absolutely	x	used by the people that needed them (as assumed)
		almost		
		not at all		

complete	ok	next		

results	transfer	43	direct and indirect jobs created

before the project (before and/or after the disaster):

n/a

within the project:

the consequences in the creation of employment opportunities of having developed the different outputs. It denotes the capacity of the project to facilitate the recovery of the economy and the achievement of the economic independence of the beneficiaries

new direct and indirect jobs	were	absolutely	x	enough to facilitate the recovery of the local economy
		almost		
		not at all		
		absolutely	x	facilitated the economic independence of beneficiaries
		almost		
		not at all		
	were	absolutely	x	created at the appropriate time
		almost		
		not at all		
		absolutely	x	represented appropriate working conditions for residents
		almost		
		not at all		

complete	ok	next		

results	transfer	44	houses occupied

before the project (before and/or after the disaster):
n/a

within the project:				
the post-project rate of occupation of dwellings. It is particularly useful to identify the acceptability of the houses provided by the multi-organisation				
the houses provided	were	absolutely	x	occupied by residents
		almost		
		not at all		
	were	absolutely	x	occupied at the appropriate time (as assumed)
		almost		
		not at all		
	were	absolutely	x	used in the appropriate way (as assumed)
		almost		
		not at all		
	were	absolutely	x	used by the people that needed them (as assumed)
		almost		
		not at all		

complete	ok	next		

results	transfer	45	insurance policies taken

before the project (before and/or after the disaster):
n/a

within the project:				
insurance policies are not a common output of reconstruction projects in the context of the selected case studies. However, it is considered here as a consequence of improving the awareness and knowledge of residents and local organisations. Transferring the risks of destruction to insurance companies is considered here as a positive consequence of educating and informing organisations and individuals about the risks of future disasters				
taking insurance policies for housing	was	very much slightly not at all	 x	incremented after the disaster
the risks of disasters	was	absolutely almost not at all	 x	reduced by the government by sharing it with insurance comp.

complete	ok	next		

results	transfer	46	emergency protocols implemented

before the project (before and/or after the disaster):
n/a

within the project:				
emergency protocols are not considered as a common output of reconstruction projects in the context of the selected case studies. However, it is considered here as a consequence of improving the awareness and knowledge of residents and local organisations. Implementing emergency protocols (particularly in urban contexts) is considered here as a positive consequence of educating and informing organisations and individuals about the risks of future disasters				
emergency protocols	were	absolutely		implemented in the region among residential areas
		almost		
		not at all	x	
contingency plans and emer. protocols	were	absolutely		included in the agenda of local authorities and organisations
		almost		
		not at all	x	

complete	ok	next		

results	transfer	47	increment of land ownership

before the project (before and/or after the disaster):
n/a

within the project:			
This is a context-sensitive indicator. It is consider in this context as a positive indicator of results as it denotes the capacity of the project to secure safe land for residents at the long run. Increment of land ownership can be due to the provision of new lots, due to the success of loan or subsidies programs or due to the successful legalisation of illegally occupied land			
land ownership	absolutely almost not at all	x 	increased in the region after the project

complete	ok	next		

results	transfer	48	**increment of home ownership**

before the project (before and/or after the disaster):
n/a

within the project:			
This is a context-sensitive indicator. It is consider in this context as a positive indicator of results. It can be due to construction of new houses, by acquisition of existing housing stock, or by upgrading of squatter settlements and shacks. This indicator denotes the capacity of the project to guarantee secure safe sheltering in the long term			
home ownership	absolutely almost not at all	x	increased in the region after the project

complete	ok	next		

results	community particip.	49	design

before the project (before and/or after the disaster):
n/a

within the project:				
Assesses the capacity of residents to actively participate in the design of their own dwelling				
residents	did	significantly		decide the distribution of spaces of their own dwelling
		partially	x	
		not		
	did	significantly	x	decide the location and orientation of their own dwelling
		partially		
		not		
	did	significantly		select the finishes of their own dwelling
		partially	x	
		not		
	did	significantly		decide the size and conditions of the spaces their dwellings
		partially		
		not	x	
	did	significantly		select the technology of the structure and main components
		partially		
		not	x	
	did	significantly		select the construction method to be used
		partially		
		not	x	

complete	ok	next		

results	community particip.	50	management

before the project (before and/or after the disaster):

n/a

within the project:

Assesses the capacity of residents to actively participate in the management of their own dwelling

residents		absolutely		
		almost		could choose whether using self-help or hiring labor force
		not at all	x	
		significantly		
	did	partially		manage the economic resources
		not	x	
		significantly		
	did	partially		manage the contracts of suppliers
		not	x	
		significantly		
	did	partially	x	determine the schedule and planning of activities
		not		
		significantly		
	did	partially	x	communicate directly with other stakeholders
		not		
		significantly	x	
	did	partially		organise people and resources in the construction field
		not		

complete	ok	next		

results	community particip.	51	financing of the project

before the project (before and/or after the disaster):
n/a

within the project:				
Assesses the capacity of residents to actively participate in the financing of their own dwelling				
residents	did	absolutely		select the financing system for the project
		almost	x	
		not at all		
	did	absolutely		participate in collecting funds
		almost		
		not at all	x	
	did	absolutely		know the costs of construction and materials
		almost	x	
		not at all		
	did	absolutely		have the option of incurring in expenses directly
		almost		
		not at all	x	
	did	absolutely		have the option to participate with own resources
		almost		
		not at all	x	
	did	absolutely		participate in financing collectively (or as a cooperative)
		almost		
		not at all	x	

complete	ok	next		

results	community particip.	52	production of components

before the project (before and/or after the disaster):
n/a

within the project:				
Assesses the capacity of residents to actively participate in the production of components for their own dwelling				
residents	did	absolutely	x	work in the production of components
		almost		
		not at all		
	did	absolutely	x	learn the technique of production of components
		almost		
		not at all		
	did	absolutely	x	operate the machines for production of components
		almost		
		not at all		
the production of components	did	absolutely	x	optimise the skills and knowledge of residents
		almost		
		not at all		

complete	ok	next		

results	community particip.	53	construction

before the project (before and/or after the disaster):
n/a

within the project:				
Assesses the capacity of residents to actively participate in construction activities for their own dwelling				
residents	did	absolutely	x	work in assembly of construction components
		almost		
		not at all		
	did	absolutely	x	learn the method of construction
		almost		
		not at all		
	did	absolutely	x	get remunerated (money, food or property) for labor force
		almost		
		not at all		
members of the family	did	absolutely	x	have the option to work in the construction field
		almost		
		not at all		

complete	ok	next		

results	community particip.	54	individual responsibility of decision making

before the project (before and/or after the disaster):
n/a

within the project:				
Assesses the level of responsibility of decision making				
residents	were	absolutely		responsible for registering to the project (or program)
		almost	x	
		not at all		
	were	absolutely		responsible for applying for the services and products offered
		almost	x	
		not at all		
	were	absolutely	x	responsible for completing the house
		almost		
		not at all		
	were	absolutely		responsible for the use of funding
		almost		
		not at all	x	
	were	absolutely		responsible for obtaining disaster-resistance standards
		almost	x	
		not at all		
	were	absolutely		responsible for obtaining and using information and know-how
		almost	x	
		not at all		
	were	absolutely		responsible for selecting where to invest the resources
		almost		
		not at all	x	

complete	ok	next		

impacts	project goals	55	debt

before the project (before and/or after the disaster):
n/a

within the project:				
the debt acquired by local organisations or the national government to develop the project. A low debt resulting from the project is considered as a potential positive effect of the project				
the debt resulting from the project	was	an insignificant	x	burden for local organisations or the national government
		a reasonable		
		a very high		

complete	ok	next		

impacts	project goals	56	environmental impact

before the project (before and/or after the disaster):
n/a

within the project:			
the positive and negative impacts of the project on the environment. This might include negative impacts due to the sprawl of urbanisation, the over exploitation of indigenous materials, and the effects of the disruption of public infrastructure (particularly sewage systems). This indicator denotes the assessment of long-term consequences on the sustainability of the project			
the project	not at all	x	had a negative effect in urban sprawl
	almost		
	absolutely		
	not at all	x	had a negative effect of over exploitation of natural resources
	almost		
	absolutely		
	not at all		had a negative effect in natural sources of water
	almost		
	absolutely	x	
	not at all		had a negative effect in natural forests
	almost	x	
	absolutely		
	not at all		had a negative effect in public health
	almost	x	
	absolutely		
	absolutely		contributed to urban/rural organisation and consolidation
	almost	x	
	not at all		
	absolutely		reduced the negative effects of the disaster in the environment
	almost	x	
	not at all		
	absolutely		reduced the negative effects of the disaster in public health
	almost	x	
	not at all		

complete	ok	next		

impacts	project goals	57	recovery of normal activities

before the project (before and/or after the disaster):

n/a

within the project:

the performance in terms of time for the recovery of normal activities. It includes assessing the time it took for the majority of the community to resume daily activities (going to work, to school, do normally domestic activities, etc.)

the project	absolutely		facilitated the recovery of: people going to work
	almost	x	
	not at all		
	absolutely		facilitated the recovery of: people going to school
	almost	x	
	not at all		
	absolutely		facilitated the recovery of: people doing domestic activities
	almost	x	
	not at all		
	absolutely		facilitated the recovery of people: doing recreational activities
	almost	x	
	not at all		

complete	ok	next		

impacts	project goals	58	physical resistance to hazards

before the project (before and/or after the disaster):
n/a

within the project:				
cumulative performance in terms of the overall resistance to natural hazards. It includes not only the resistance of the original units (as built during the project) but also the resistance of later additions and modifications to the original units. This indicator compiles the general resistance to hazards due to safe location, exposure to danger, awareness and mitigation of possible risks, implementation of better building codes and standards, and in general all the structural and non structural risks of unsafe conditions. It denotes the capacity of the project to guarantee long term safe conditions of housing				
original houses	were	absolutely	x	safe (resistance to natural hazards) at the mid-term
		almost		
		not at all		
modified houses (inc. additions)	were	absolutely		safe (resistance to natural hazards) at the mid-term
		almost	x	
		not at all		
infrastructure	was	absolutely		safe (resistance to natural hazards) at the mid-term
		almost		
		not at all	x	
other buildings and facilities	were	absolutely		safe (resistance to natural hazards) at the mid-term
		almost		
		not at all	x	

complete	ok	next		

impacts	project goals	59	transfer of better building practices

before the project (before and/or after the disaster):

n/a

within the project:

the performance in the assimilation of better building practices, particularly in self-help and this including better use of materials, improvements in local technologies, general awareness of risks, respect of building codes and standards, etc. This variable indicates the capacity of the project to reduce the long-term physical vulnerabilities of the community (particularly if a great percentage of regular housing is user-made)

user-made constructions after the project	were	absolutely almost not at all	 x 	safe (resistance to natural hazards)
construction technologies	were	absolutely almost not at all	 x 	improved in user-made constructions after the disaster
user-made constructions after the project	were	absolutely almost not at all	 x 	vigilant of construction codes and standards
proper maintenance	was	absolutely almost not at all	 x 	conducted to housing structures

complete	ok	next		

impacts	project goals	60	institutional capacity and development

before the project (before and/or after the disaster):
n/a

within the project:				
the performance of the project in reinforcing the administrative methods, expertise, know-how, and management tools of local authorities for disaster management. This indicator denotes the capacity of the project to increase the level of development from the local authorities point of view. It includes assessing: (i) the implementation or not of programs of education, training, administrative cooperation and information targeted to local authorities; and (ii) the level of participation of regular administrative units (municipalities, regular public entities, etc.) in the reconstruction project. The creation of temporary public entities with the exclusive mandate of dealing with reconstruction activities - which dissolve once reconstruction is finished - is considered as a potential cause of loss of the know how and expertise gained through the development of the project				
education and training programs	were	absolutely almost not at all	x	implemented for local authorities and administrative units
local administrative units		absolutely almost not at all	x	participated in the design and management of the project
temporary entities for reconstruction	were	not at all almost absolutely	x	dissolved after the project
new administrative methods and plans	were	not at all almost absolutely	x	implemented after the project
local administrative units		absolutely almost not at all	x	had responsibility of the good development of the project

complete	ok	next		

impacts	project goals	61	equality of gender and minorities

before the project (before and/or after the disaster):

n/a

within the project:

the performance of the project in selecting the beneficiaries of the project. It highlights possible segregation by gender, race, social status, religious affiliation, etc. It may also denote the selection of beneficiaries according to other variables such as: capacity of acquiring debts, family income, tenure of civil address or registered ID, land or home ownership, legal occupation of land, tenure of titles of legal property, location in safe areas, etc. This indicator denotes the performance of the project in terms of covering and scope

a fair method of selection of beneficiaries	was	absolutely almost not at all	 x 	implemented in the project
women and men	had	absolutely almost not at all	x 	the same rights to obtain products and services in the project
residents from different races	had	absolutely almost not at all	x 	the same rights to obtain products and services in the project
residents from different social classes	had	absolutely almost not at all	x 	the same rights to obtain products and services in the project
residents with different religious affiliation	had	absolutely almost not at all	x 	the same rights to obtain products and services in the project
people without civil ID or not registered	had	absolutely almost not at all	x 	the same rights to obtain products and services in the project
residents of the lowest economic levels	were	absolutely almost not at all	x 	included as beneficiaries of products and services
people without legal tenure	were	absolutely almost not at all	x 	included as beneficiaries of products and services
non land owners or home owners	were	absolutely almost not at all	x 	included as beneficiaries of products and services
people located in unsafe areas	were	absolutely almost not at all	 x	included as beneficiaries of products and services

complete	ok	next		

impacts	project goals	62	all settlements in safe areas

before the project (before and/or after the disaster):
n/a

within the project:				
the contribution of the project to eliminate housing located in dangerous areas. It highlights the permanence of squatting settlements in risk-prone areas and remaining risks due to location. It denotes the capacity of the project to achieve the ultimate goal of eliminating physical vulnerability of housing				
housing in the region	was	absolutely almost not at all	 x 	built in safe areas
the project		absolutely almost not at all	 x 	contributed to reduce settlements in risk-prone areas
		absolutely almost not at all	x 	contributed to reduce the physical vulnerability of housing
a similar disaster	is	absolutely almost not at all	 x 	unlikely to happen to the same population in the same region

complete	ok	start		

FIPs of the MSS's project in San Salvador

inputs	multi organisation	1	the capacity to attract funds for the project

before the project (before and/or after the disaster):
n/a

within the project:			
capacity to obtain donations and/or financing. It assesses the amount of resources obtained vs. the initial estimation and budget			
the capacity to attract funds	absolutely		permitted to collect the funds required according to the initial estimations
	almost		
	not at all	x	
	absolutely		permitted to get on time the funds that were required
	almost		
	not at all	x	
	absolutely		guaranteed a continuous investment of resources
	almost		
	not at all	x	
	absolutely		permitted to target an appropriate level of quality in the outputs offered
	almost		
	not at all	x	
	absolutely		permitted to deal with a complete series of outputs
	almost		
	not at all	x	
	absolutely		permitted the organisation an adequate independence of decision making
	almost		
	not at all	x	

complete	ok	next		

next

inputs	multi organisation	2	level of integration with the community

before the project (before and/or after the disaster):

n/a

within the project:

directly related with the definition of integration used here. Includes the capacity of the organisation to develop horizontal relations with members of the community, beneficiaries and grass roots organisations in order to accomplish common objectives

local residents	absolutely almost not at all	 x	had an active participation within the multi-organisation
local associations	absolutely almost not at all	 x 	had an active participation within the multi-organisation
local authorities	absolutely almost not at all	x 	had an active participation within the multi-organisation
grass-roots NGOs	absolutely almost not at all	 x 	had an active participation within the multi-organisation
local contractors	absolutely almost not at all	 x 	had an active participation within the multi-organisation
the organis. in charge of the project had	completely partially not	x 	established relations in the region before the beginning of the project

complete	ok	next		

inputs	multi organisation	3	level of integration between organisations

before the project (before and/or after the disaster):

n/a

within the project:

directly related with the definition of integration used here. Includes the capacity of the organisation to develop horizontal and vertical relations with banks, NGOs, private companies, etc. in order to accomplish and reinforce common objectives

individual objectives of each organis.	were	absolutely		coordinated to achieve a common objective
		almost		
		not at all	x	
the organisation in charge of the project	had	enough		links with other organis. to work together towards a common objective
		almost enough		
		not enough	x	
integration with other organisations		absolutely		resulted in appropriate cooperation
		almost		
		not at all	x	
integration with other organisations		absolutely		facilitated collecting funds and obtaining financing
		almost		
		not at all	x	
the relations between the organisations	were	absolutely		consolidated when needed
		almost		
		not at all	x	

complete	ok	next		

inputs	multi organisation	4	level of differentiation between organisations

before the project (before and/or after the disaster):

n/a

within the project:

based on the assessment of corporate performance as proposed by Lawrence and Lorsh. Includes the assessment of the level of definition of different roles among the organisations of the project team. The performance decreases if activities made by different organisations overlapped incurring in redundancy, too much assistance, or repetition

the differentiation of responsibilities	was	absolutely		defined in a clear manner
		almost		
		not at all	x	
the differentiation of responsibilities		never		overlapped incurring in repetition and redundancy
		sometimes	x	
		always		
the differentiation of responsibilities		absolutely		took advantage of the strengths and weaknesses of each organisation
		almost		
		not at all	x	
the differentiation of responsibilities		absolutely		contributed to attain a common objective
		almost		
		not at all	x	
the differentiation of responsibilities	was	absolutely		set up when needed
		almost		
		not at all	x	

complete	ok	next		

inputs	multi organisation	5	project's administrative costs

before the project (before and/or after the disaster):

n/a

within the project:

the level of optimization of economic resources for the benefit of beneficiaries. Assessed as a the percentage of the project's budget. Lower administrative costs = better performance

project's administrative costs	were	absolutely	x	reduced through the optimisation of local resources
		almost		
		not at all		
	were	absolutely	x	reduced by minimising the costs of expatriate officers
		almost		
		not at all		
	were	absolutely		justified by having reduced overall costs for the project
		almost	x	
		not at all		
		absolutely	x	favored the maximum use of money for the benefit of beneficiaries
		almost		
		not at all		

complete	ok	next		

inputs	multi organisation	6	the capacity of the system to adapt to the environm.

before the project (before and/or after the disaster):
n/a

within the project:				
the capacity to react to the risks and opportunities of the environment at the social, economic and political levels. Includes an assessment of the influence of the environment in the objectives targeted by the multi-organisation				
the objectives of the project	were	not at all		affected by negative unexpected changes of the environment
		somehow		
		greatly	x	
the risks inherent to the environment	were	absolutely		assessed by the multi-organisation during the project
		almost		
		not at all	x	
the organis. responsible of the project		absolutely		anticipated a plan to minimise (share) financial risks
		almost		
		not at all	x	
the organis. responsible of the project		absolutely		took advantage of unexpected opportunities in the environment
		almost	x	
		not at all		
when required, changes in the project	were	absolutely		implemented
		almost	x	
		not at all		
the organi. responsible of the project	was	absolutely		prepared to work in a hostile environment
		almost		
		not at all	x	

complete	ok	next		

inputs	management tools	7	a census of local residents

before the project (before and/or after the disaster):
n/a

within the project:				
dams, barriers and retaining walls built to protect housing from natural hazards (landslides, floods, fires, etc). Safe conditions and reduction of risks for the population are assessed in this indicator				
a census of local residents	was			not conducted (end)
				conducted by a different program/organisation (end)
			x	conducted as part of the project
	was	absolutely	x	inclusive of diversity and everybody in the community
		almost		
		not at all		
	was	absolutely		conducted and used on time
		almost	x	
		not at all		
	was	absolutely		used to adapt the project to the real needs of the population
		almost		
		not at all	x	
	was	absolutely		the appropriate strategy (management tool) to use
		almost	x	
		not at all		

complete	ok	next		

inputs	management tools	8	previous studies (typologies, techniques, etc)

before the project (before and/or after the disaster):

n/a

within the project:

pre-project technical studies (pre- or post-disaster) to collect information about local living conditions, architectural typologies, construction techniques, etc.

previous studies (typologies, techniques, etc)	were			not conducted (end)
				conducted by a different program/organisation (end)
			x	conducted as part of the project
	were	absolutely	x	useful to discover new information about local characteristics
		almost		
		not at all		
	were	absolutely		conducted and used on time
		almost	x	
		not at all		
	were	absolutely		used to adapt the project to local characteristics
		almost	x	
		not at all		
	were	absolutely		properly reported or published for future reference
		almost	x	
		not at all		
	were	absolutely		the appropriate strategy (management tool) to use
		almost	x	
		not at all		

complete	ok	next		

inputs	management tools	9	surveys of people's needs

before the project (before and/or after the disaster):

n/a

within the project:

post-disaster assessment of damages and real needs (through questionnaires, visits, meetings with the community, etc.)

surveys of people's needs	were			not conducted (end)
				conducted by a different program/organisation (end)
			x	conducted as part of the project
	were	absolutely		useful to reveal new information about residents expectations
		almost	x	
		not at all		
	were	absolutely		conducted and used on time
		almost		
		not at all	x	
	were	absolutely		used to adapt the project to real needs
		almost	x	
		not at all		
	were	absolutely		properly reported or published for future reference
		almost		
		not at all	x	
	were	absolutely		the appropriate strategy (management tool) to use
		almost	x	
		not at all		

complete	ok	next		

inputs	management tools	10	consultation with the community

before the project (before and/or after the disaster):

n/a

within the project:

assessment of the users' opinions and suggestions regarding living conditions, expectations, and requirements

consultation with the community	was			not conducted (end)
				conducted by a different program/organisation (end)
			x	conducted as part of the project
		absolutely		contributed in the beginning to set up the priorities of the project
		almost	x	
		not at all		
		absolutely		permitted to make changes and adapt the project during the process
		almost		
		not at all	x	
		absolutely	x	enhanced diversity and multiplicity
		almost		
		not at all		
		absolutely	x	permitted a fair representation of all the residents
		almost		
		not at all		
	was			intended to design the project
			x	intended to adapt the existing project
				intended to present the project to residents

complete	ok	next		

inputs	local resources	11	the capacity of residents to work in construction

before the project (before and/or after the disaster):
n/a

within the project:				
indicates availability of time, knowledge and interest to work in construction. It assesses the users' availability of time to work in construction; users' skills and know how in building practices; and users' interest to invest their time and expertise in construction				
beneficiaries of the project	had	sufficient		knowledge about construction practices
		relative		
		insufficient	x	
	had	sufficient		availability of time to work in construction
		relative		
		insufficient	x	
	had	sufficient		interest to work in construction activities
		relative	x	
		insufficient		
	had	sufficient		guidance to work in construction activities
		relative		
		insufficient	x	
	had	sufficient		physical conditions to work in construction activities
		relative	x	
		insufficient		

complete	ok	next		

inputs	local resources	12	materials and equipment available

before the project (before and/or after the disaster):

n/a

within the project:

the capacity to use indigenous materials (wood, sand, earth, palm leaves, bamboo, clay, etc.) for the production of construction components and the availability of tools and equipment for construction

local indigenous materials	were	absolutely		available in the region
		almost		
		not at all	x	
		absolutely		corresponded to the skills of the affected population
		almost	x	
		not at all		
	were	absolutely	x	safe for the environment (preventing degradation of natural resources)
		almost		
		not at all		
tools and equipment	were	absolutely		available in the region
		almost		
		not at all	x	
		absolutely		corresponded to the skills of the affected population
		almost	x	
		not at all		

complete	ok	next		

outputs	financial / funding	13	tax incentives for companies / individuals

before the project (before and/or after the disaster):

n/a

within the project:

the implementation of tax incentives to attract investment and economic recovery after the disaster. Tax incentives are targeted to promote the creation of employement opportunties, new businesses and the development of local industries. Equally, tax incentives to individuals during a certain period of time ease the financial burden of recovery of the affecetd families

tax incentives	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	financial / funding	14	loans for housing

before the project (before and/or after the disaster):

pre-disaster capacity of local residents to have access to banking loans and mortgages for housing

loans for housing	were	widely		accessible to residents before the project
		not widely	x	
	were	absolutely		appropriate for the needs of the population
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

the implementation of loans for repairs, self-help initiatives or buying a new house. This indicator denotes the confidence of the financial system in the affected community and the capacity of the users to enter into the regular banking system

loans for housing	were			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely		achieved as planned
		almost	x	
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all	x	
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all	x	
	were	absolutely		offered to the right people who needed them
		almost		
		not at all	x	
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all	x	
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all	x	

complete	ok	next		

outputs	financial / funding	15	subsidies for housing

before the project (before and/or after the disaster):

pre-disaster capacity of local residents to have access to governmental subsidies for housing

subsidies for housing	were	widely		accessible to residents before the project
		not widely	x	
	were	absolutely		appropriate for the needs of the population
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

non-reimbursable financial aid for repairs, purchase of a new house or self-help

subsidies for housing	were			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely		achieved as planned
		almost	x	
		not at all		
	were	absolutely		on time when needed
		almost	x	
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all	x	
	were	absolutely		offered to the right people who needed them
		almost		
		not at all	x	
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all	x	
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all	x	

complete	ok	next		

outputs	financial / funding	16	loans for infrastructure or others

before the project (before and/or after the disaster):

pre-disaster capacity of local residents to have access to regular loans for individual or familial investment

loans for infrastructure or others	were	widely		accessible to residents before the project
		not widely	x	
	were	absolutely		appropriate for the needs of the population
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

loans for infrastructure repair, for buildings related with sources of income (for individual shops, small industries, etc), or other initiatives for recovery. This indicator denotes the confidence of the financial system in the affected community and the capacity of the users to enter into the regular banking system

loans for infrastructure or others	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	financial / funding	17	subsidies for infrastructure or others

before the project (before and/or after the disaster):

pre-disaster capacity of local residents to have access to governmental subsidies for individual or familial investment

subsidies for infrastructure or others	were	widely		accessible to residents before the project
		not widely	x	
	were	absolutely		appropriate for the needs of the population
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

non-reimbursable financial aid for infrastructure repair, for buildings related with sources of income (for individual shops, small industries, etc), or for other initiatives for recovery

subsidies for infrastructure or others	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	infrastructure	18	dams, barriers, retaining walls

before the project (before and/or after the disaster):

assesses if dams, barriers and retaining walls existed to protect housing from natural hazards (landslides, floods, fires, etc) and if this infrastructure guaranteed security and did not represent risks for the population

dams, barriers, retaining walls	were	absolutely		safe to protect residents before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

dams, barriers and retaining walls built to protect housing from natural hazards (landslides, floods, fires, etc). Safe conditions and reduction of risks for the population are assessed in this indicator

dams, barriers, retaining walls	were			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely	x	achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost	x	
		not at all		
	were	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely	x	offered to the right people who needed them
		almost		
		not at all		
	were	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely	x	safe to protect residents
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost	x	
		not at all		

complete	ok	next		

outputs	infrastructure	19	roads

before the project (before and/or after the disaster):

assesses if roads (urban or rural) were appropriate and enough to cover the needs of housing in the community and the risks that they might represent for the population. It also assesses the damages in roads caused by the disaster

roads	were	absolutely	x	appropriate for the context before the project
		not completely		
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely	x	safe in case of emergency and danger
		not completely		
	were	absolutely	x	functional after the disaster
		not completely		

within the project:

the performance in the construction of roads. The indicator applies at two levels: public infrastructure (for the benefit of the community) and individual infrastructure (in private property for the benefit of its owners). Individual infrastructure includes the activities and construction required for the connection to public services. These indicators illustrate the sustainability of the project and the consideration of long term effects in public health and safety

roads	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe in case of emergency and danger
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	infrastructure	20	water supply

before the project (before and/or after the disaster):

assesses if water supply was appropriate and enough to cover the needs of housing in the community and the risks that it might represent for the population. It also assesses the damages caused by the disaster

water supply infrastructure	was	absolutely		appropriate for the context before the project
		not completely	x	
	was	absolutely		enough to cover the needs of the population
		not completely	x	
	was	absolutely		safe for public health .
		not completely	x	
	was	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of water supply infrastructure. The indicator applies at two levels: public infrastructure (for the benefit of the community) and individual infrastructure (in private property for the benefit of its owners). Individual infrastructure includes the activities and construction required for the connection to public services. These indicators illustrate the sustainability of the project and the consideration of long term effects in public health and safety

water supply infrastructure	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		safe for public health
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	infrastructure	21	electricity

before the project (before and/or after the disaster):

assesses if electricicty supply was appropriate and enough to cover the needs of housing in the community and the risks that it might represent for the population. It also assesses the damages caused by the disaster

electricity infrastructure	was	absolutely		appropriate for the context before the project
		not completely	x	
	was	absolutely		enough to cover the needs of the population
		not completely	x	
	was	absolutely		safe considering local codes
		not completely	x	
	was	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of infrastructure for electricity supply. The indicator applies at two levels: public infrastructure (for the benefit of the community) and individual infrastructure (in private property for the benefit of its owners). Individual infrastructure includes the activities and construction required for the connection to public services. These indicators illustrate the sustainability of the project and the consideration of long term effects in public health and safety

electricity infrastructure	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		safe considering local codes
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	infrastructure	22	sewage

before the project (before and/or after the disaster):

assesses if the sewage system was appropriate and enough to cover the needs of housing in the community and the risks that it might represent for the population. It also assesses the damages caused by the disaster

sewage infrastructure	was	absolutely		appropriate for the context before the project
		not completely	x	
	was	absolutely		enough to cover the needs of the population
		not completely	x	
	was	absolutely		safe for public health
		not completely	x	
	was	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of sewage infrastructure. The indicator applies at two levels: public infrastructure (for the benefit of the community) and individual infrastructure (in private property for the benefit of its owners). Individual infrastructure includes the activities and construction required for the connection to public services. These indicators illustrate the sustainability of the project and the consideration of long term effects in public health and safety

sewage infrastructure	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		safe for public health
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	infrastructure	23	telephone

before the project (before and/or after the disaster):

assesses if the infrastructure for telephone system was appropriate and enough to cover the needs of housing in the community. It also assesses the damages caused by the disaster

infrastructure for telephone	was	absolutely		appropriate for the context before the project
		not completely	x	
	was	absolutely		enough to cover the needs of the population
		not completely	x	
	was	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of infrastructure for telephone systems. The indicator applies at two levels: public infrastructure (for the benefit of the community) and individual infrastructure (in private property for the benefit of its owners). Individual infrastructure includes the activities and construction required for the connection to public services. These indicators illustrate the sustainability of the project and the consideration of long term effects in public health and safety

infrastructure for telephone	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	community services	24	schools

before the project (before and/or after the disaster):

pre-project conditions of facilities

schools	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely		safe (resistance to hazards)
		not completely	x	
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of facilities

schools	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	community services	25	health centers

before the project (before and/or after the disaster):

pre-project conditions of facilities

health centers	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely		safe (resistance to hazards)
		not completely	x	
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of facilities

health centers	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	community services	26	community centers / religious bldg.

before the project (before and/or after the disaster):

pre-project conditions of facilities

community centers / religious bldg.	were	absolutely not completely		appropriate for the context before the project
			x	
	were	absolutely not completely		enough to cover the needs of the population
			x	
	were	absolutely not completely		safe (resistance to hazards)
			x	
	were	absolutely not completely		functional after the disaster
			x	

within the project:

the performance in the construction of facilities

community centers / religious bldg.	were			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely almost not at all	x	achieved as planned
	were	absolutely almost not at all	x	on time when needed
	were	absolutely almost not at all	x	appropriate for the needs of the population
	were	absolutely almost not at all	x	offered to the right people who needed them
	were	absolutely almost not at all	x	the appropriate strategy to be used
	were	absolutely almost not at all	x	safe as offered (resist. to hazards of the original product)
	were	absolutely almost not at all	x	enough to cover the needs of the population

complete	ok	next		

outputs	community services	27	police / fire stations

before the project (before and/or after the disaster):

pre-project conditions of facilities

police / fire stations	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely		safe (resistance to hazards)
		not completely	x	
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of facilities

police / fire stations	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	housing	28	new lots

before the project (before and/or after the disaster):

the pre-disaster level of access to land property; and/or pre- and post-disaster risks associated with the tenure of land, particularly due to location in zones of risk

lots	were	absolutely		appropriate for the context before the project
		not completely	x	
land tenure	was	absolutely		enough to cover the needs of the population
		not completely	x	
land	was	absolutely		safe (resistance to hazards)
		not completely	x	
land tenure	was	widely		accessible to residents
		not widely	x	

within the project:

initiatives targeted to increase the residents' capacity to acquire safe lots for housing; including loans or subsidies given for purchasing land or the direct donation of lots

new lots	were			not offered at all to the affected population (end)
			x	offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	housing	29	emergency shelters

before the project (before and/or after the disaster):

pre-disaster arrangements and planning made by the organisations to adequately respond to the emergency. It represents the access of the community to contingency plans by the civil defense, fire departments, Red Cross, etc.

emergency shelters	were	absolutely		planned, before the disaster, through contingency plans
		not completely	x	
emergency organisations	were	absolutely		prepared for a housing emergency
		not completely	x	
authorities –	were	absolutely		prepared for a housing emergency
		not completely	x	
info about contingency plans	was	widely		accessible to residents before the disaster
		not widely	x	

within the project:

implementation of an emergency sheltering plan; including provision of tents, plastics or other materials to build shelters for the first days after the disaster

emergency shelters	were			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely		achieved as planned
		almost	x	
		not at all		
	were	absolutely	x	on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all	x	
	were	absolutely	x	offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost	x	
		not at all		
	were	absolutely	x	safe to short-term protection of residents
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all	x	

complete	ok	next		

outputs	housing	30	temporary housing

before the project (before and/or after the disaster):

pre-disaster arrangements and planning made by authorities and local NGOs to adequately respond to the requireness for transitory housing

temporary housing	was	absolutely		planned, before the disaster in urban plans
		not completely	x	
emergency organisations	were	absolutely		prepared for building transitory housing
		not completely	x	
authorities	were	absolutely		prepared for building transitory housing
		not completely	x	
info about temporary housing plans	was	widely		accessible to residents before the disaster
		not widely	x	

within the project:

this might include the implementation of: (i) temporary units (i.e. pre-fab and winterised units); (ii) adapted temporary housing (public facilities or rented apartments); or (iii) self-provided temporary housing (homes of families / friends, user-built shelters, or second homes)

temporary housing	was			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely		achieved as planned
		almost	x	
		not at all		
	were	absolutely		on time when needed
		almost	x	
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all	x	
	were	absolutely		offered to the right people who needed them
		almost	x	
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost	x	
		not at all		
	were	absolutely		safe for mid-term protection of residents
		almost	x	
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost	x	
		not at all		

complete	ok	next		

outputs	housing	31	new houses

before the project (before and/or after the disaster):

the pre-disaster level of access to housing (or the contrary: the level of housing shortage) and post-disaster homelessness caused by the disaster

houses	were	absolutely		accessible to all residents before the disaster
		not completely	x	
new houses	were	absolutely		unnecessary after the disaster
		not completely	x	

within the project:

initiatives targeted to facilitate the acquisition of new permanent housing, including (if necessary) relocation of residents living in dangerous conditions. Permanent new housing can be obtained: (i) through the provision of finished units; (ii) by facilitating and organising self-help construction; or (iii) by facilitating and organising the purchase of new housing existing in the market

new houses	were			not offered at all to the affected population (end)
			x	offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	housing	32	reconstructed houses

before the project (before and/or after the disaster):

the pre- and post-disaster risks of collapse of housing structures due to one or some of the following reasons: (i) lack of maintenance; (ii) use of inadequate materials; (iii) use of inadequate technologies; (iv) unsafe additions and structural modifications to housing; (v) insufficient construction codes and standards

houses	were	absolutely		functional after the disaster
		not completely	x	
	were	absolutely		appropriate for the needs of the population
		not completely	x	
	were	absolutely		safe after the disaster
		not completely	x	

within the project:

the reconstruction of affected structures, including minor repairs and major reconstruction

the reconstruction of affected houses	was			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all	x	
	was	absolutely		on time when needed
		almost		
		not at all	x	
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all	x	
	was	absolutely		offered to the right people who needed it
		almost		
		not at all	x	
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all	x	
	was	absolutely		safe for long-term protection of residents
		almost		
		not at all	x	
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all	x	

complete	ok	next		

outputs	industry /employm.	33	bldgs/infras. for industry & income generation

before the project (before and/or after the disaster):

the pre-disaster level of access to sources of income; and/or pre- and post-disaster risks associated with the buildings and infrastructure related with income generation, particularly the risks of collapse, destruction of infrastructure, destruction of plantations, machinery or equipment, etc.

bldgs/infras. for industry & income generation	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	widely		accessible to residents
		not widely	x	
	were	absolutely		safe (resistance to hazards)
		not completely	x	
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

the construction of buildings and infrastructure associated with the generation of income and employment at the scale of single families or small clusters (excluding the reconstruction of large industries/companies). It might include the reconstruction of shops, small industries, small scale infrastructure for production, processing or agriculture activities, etc., assessing the consideration of long-term needs for economic recovery, the capacity of the community to become economically independent, and in general, the sustainability of the project. Only physical construction is considered, not including functioning and management of facilities

bldgs/infras. for industry & income generation	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	industry /employm.	34	unemployment subsidies

before the project (before and/or after the disaster):

pre-disaster access to regular governmental unemployment subsidies (equivalent to welfare)

unemployment subsidies	were	widely		accessible to residents
		not widely	x	
	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

initiatives targeted to the implementation of subsidies for people that have lost their jobs or sources of income during the disaster. This indicator denotes the consideration of short-term needs for economic recovery

unemployment subsidies	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	others	35	rescue

before the project (before and/or after the disaster):				
the pre-disaster capacity of local institutions (the civil defense, the police, the army, the local NGOs, the local Red Cross, etc.) to speedily and effectively react to the destruction				
local organisations	were	absolutely		on time to conduct emergency and rescue
		not completely	x	
		absolutely		effectively conducted contingency and rescue
		not completely	x	
external aid	was	absolutely		unnecessary for rescue activities
		not completely	x	

within the project:				
the implementation of rescue activities				
rescue activities	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	others	36	psychological aid

before the project (before and/or after the disaster):

pre-disaster access to psychological aid. Even though this is a difficult aspect to identify in urban contexts it is easier to identify as being absent in most of rural contexts

psychological aid	was	widely		accessible to residents
		not widely	x	
	was	absolutely		appropriate for the needs of the population
		not completely	x	
	was	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

initiatives targeted to provide psychological aid to the affected residents. This might include individual or group therapies, giving advice and information in newspapers or magazines

psychological aid	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	others	37	food

before the project (before and/or after the disaster):				
pre-disaster access to food, it highlights pre-disaster and post-disaster levels of malnutrition				
food	was	absolutely		accessible to residents
		not completely	x	
	was	absolutely		appropriate for the needs of the population
		not completely	x	
	was	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:				
initiatives targeted to provide food to the affected residents in the first days after the disaster.				
food	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	others	38	medical aid

before the project (before and/or after the disaster):

pre- and post-disaster level of access to regular medical care. This vulnerability might consider the availability of health centers in the region and a qualitative assessment of the capacity of residents to gain access to health insurances

medical aid	was	widely		accessible to residents
		not widely	x	
	was	absolutely		appropriate for the needs of the population
		not completely	x	
	was	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

initiatives targeted to the provision of medical assistance in the first days after the disaster

medical aid	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	others	39	temporary infrastructure

before the project (before and/or after the disaster):

the capacity of institutions to react to the destruction of public services and infrastructure, particularly the reaction of governmental organizations in charge of public services and roads

temporary infrastructure	was	absolutely		planned in contingency plans
		not completely	x	
local organisations	were	absolutely		prepared to react to the destruction of infrastructure
		not completely	x	
external aid	was	absolutely		unnecessary after the disaster
		not completely	x	

within the project:

initiatives targeted to the implementation of temporary electrical and telephone systems, temporary water supply, and temporary bridges, dams or any other infrastructure required to guarantee the safety and recovery of residents. This indicator assesses the capacity of residents to quickly resume daily activities

temporary infrastructure	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	others	40	education and technical assistance

before the project (before and/or after the disaster):

pre-disaster access to technical education and knowledge. It might include assessing the average access to schooling and informal education in the region

schooling (up to secondary)	was	widely		accessible to residents
		not widely	x	
residents	had	complete		knowledge about construction -related subjects
		insufficient	x	
technical courses and informal education	were	widely		accessible to residents
		not widely	x	

within the project:

the implementation of plans for education and technical assistance. It might include education in disaster prevention, education in better construction practices, formation on leadership, equity, human rights, protection of the environment, etc. and technical assistance for developing better construction practices or for the assembly of construction components

education and technical assistance	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	others	41	information

before the project (before and/or after the disaster):

pre-disaster access to information related with risks, awareness, contingency and coping activities. It might include assessing the average access to the media (news papers, internet, TV and radio), the existence of campaigns of information and the access to local and external publications

information concerning risks, awareness, etc.	was	widely		accessible to residents
		not widely	x	
campaigns of information to the public	were	widely		used in the region
		not widely	x	
residents	had	widely		access to the media in general
		not widely	x	

within the project:

the implementation of plans for dissemination of information and knowledge regarding the disaster or the reconstruction activities. It might include publications, meetings with the community and information through the media to inform about the causes and effects of the disaster, the projects in action, how to access to the benefits of the project, how to find a job, etc.

information	was			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	was	absolutely		achieved as planned
		almost	x	
		not at all		
	was	absolutely		on time when needed
		almost	x	
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost	x	
		not at all		
	was	absolutely		offered to the right people who needed it
		almost	x	
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost	x	
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all	x	

complete	ok	next		

results	transfer	42	loans given and subsidies allocated

before the project (before and/or after the disaster):
n/a

within the project:				
the performance in the transfer of financial solutions and funding, being useful to identify if the money finally reached the beneficiaries				
loans and subsidies offered	were	absolutely		allocated as planned
		almost		
		not at all	x	
	were	absolutely		used at an appropriate time (as assumed)
		almost		
		not at all	x	
	were	absolutely	x	used in the appropriate way (as assumed)
		almost		
		not at all		
	were	absolutely		used by the people that needed them (as assumed)
		almost	x	
		not at all		

complete	ok	next		

results	transfer	43	direct and indirect jobs created

before the project (before and/or after the disaster):

n/a

within the project:

the consequences in the creation of employment opportunities of having developed the different outputs. It denotes the capacity of the project to facilitate the recovery of the economy and the achievement of the economic independence of the beneficiaries

new direct and indirect jobs	were	absolutely		enough to facilitate the recovery of the local economy
		almost		
		not at all	x	
		absolutely		facilitated the economic independence of beneficiaries
		almost		
		not at all	x	
	were	absolutely		created at the appropriate time
		almost		
		not at all	x	
		absolutely		represented appropriate working conditions for residents
		almost		
		not at all	x	

complete	ok	next		

results	transfer	44	houses occupied

before the project (before and/or after the disaster):
n/a

within the project:				
the post-project rate of occupation of dwellings. It is particularly useful to identify the acceptability of the houses provided by the multi-organisation				
the houses provided	were	absolutely		occupied by residents
		almost		
		not at all	x	
	were	absolutely		occupied at the appropriate time (as assumed)
		almost		
		not at all	x	
	were	absolutely		used in the appropriate way (as assumed)
		almost		
		not at all	x	
	were	absolutely		used by the people that needed them (as assumed)
		almost		
		not at all	x	

complete	ok	next		

results	transfer	45	insurance policies taken

before the project (before and/or after the disaster):
n/a

within the project:				
insurance policies are not a common output of reconstruction projects in the context of the selected case studies. However, it is considered here as a consequence of improving the awareness and knowledge of residents and local organisations. Transferring the risks of destruction to insurance companies is considered here as a positive consequence of educating and informing organisations and individuals about the risks of future disasters				
taking insurance policies for housing	was	very much		incremented after the disaster
		slightly		
		not at all	x	
the risks of disasters	was	absolutely		reduced by the government by sharing it with insurance comp.
		almost		
		not at all	x	

complete	ok	next		

results	transfer	46	emergency protocols implemented

before the project (before and/or after the disaster):

n/a

within the project:

emergency protocols are not considered as a common output of reconstruction projects in the context of the selected case studies. However, it is considered here as a consequence of improving the awareness and knowledge of residents and local organisations. Implementing emergency protocols (particularly in urban contexts) is considered here as a positive consequence of educating and informing organisations and individuals about the risks of future disasters

emergency protocols	were	absolutely		implemented in the region among residential areas
		almost		
		not at all	x	
contingency plans and emer. protocols	were	absolutely		included in the agenda of local authorities and organisations
		almost	x	
		not at all		

complete	ok	next		

results	transfer	47	**increment of land ownership**

before the project (before and/or after the disaster):
n/a

within the project:			
This is a context-sensitive indicator. It is consider in this context as a positive indicator of results as it denotes the capacity of the project to secure safe land for residents at the long run. Increment of land ownership can be due to the provision of new lots, due to the success of loan or subsidies programs or due to the successful legalisation of illegally occupied land			
land ownership	absolutely almost not at all	 x 	increased in the region after the project

complete	ok	next		

results	transfer	48	increment of home ownership

before the project (before and/or after the disaster):
n/a

within the project:			
This is a context-sensitive indicator. It is consider in this context as a positive indicator of results. It can be due to construction of new houses, by acquisition of existing housing stock, or by upgrading of squatter settlements and shacks. This indicator denotes the capacity of the project to guarantee secure safe sheltering in the long term			
home ownership	absolutely		increased in the region after the project
	almost		
	not at all	x	

complete	ok	next		

results	community particip.	49	design

before the project (before and/or after the disaster):
n/a

within the project:				
Assesses the capacity of residents to actively participate in the design of their own dwelling				
residents	did	significantly		decide the distribution of spaces of their own dwelling
		partially		
		not	x	
	did	significantly		decide the location and orientation of their own dwelling
		partially		
		not	x	
	did	significantly		select the finishes of their own dwelling
		partially		
		not	x	
	did	significantly		decide the size and conditions of the spaces their dwellings
		partially		
		not	x	
	did	significantly		select the technology of the structure and main components
		partially		
		not	x	
	did	significantly		select the construction method to be used
		partially		
		not	x	

complete	ok	next		

results	community particip.	50	management

before the project (before and/or after the disaster):

n/a

within the project:

Assesses the capacity of residents to actively participate in the management of their own dwelling

residents		absolutely		could choose whether using self-help or hiring labor force
		almost		
		not at all	x	
	did	significantly		manage the economic resources
		partially		
		not	x	
	did	significantly		manage the contracts of suppliers
		partially		
		not	x	
	did	significantly		determine the schedule and planning of activities
		partially		
		not	x	
	did	significantly		communicate directly with other stakeholders
		partially		
		not	x	
	did	significantly		organise people and resources in the construction field
		partially		
		not	x	

complete	ok	next		

results	community particip.	51	financing of the project

before the project (before and/or after the disaster):
n/a

within the project:				
Assesses the capacity of residents to actively participate in the financing of their own dwelling				
residents	did	absolutely		select the financing system for the project
		almost		
		not at all	x	
	did	absolutely		participate in collecting funds
		almost		
		not at all	x	
	did	absolutely		know the costs of construction and materials
		almost		
		not at all	x	
	did	absolutely		have the option of incurring in expenses directly
		almost		
		not at all	x	
	did	absolutely		have the option to participate with own resources
		almost		
		not at all	x	
	did	absolutely		participate in financing collectively (or as a cooperative)
		almost		
		not at all	x	

complete	ok	next		

results	community particip.	52	production of components

before the project (before and/or after the disaster):
n/a

within the project:				
Assesses the capacity of residents to actively participate in the production of components for their own dwelling				
residents	did	absolutely		work in the production of components
		almost		
		not at all	x	
	did	absolutely		learn the technique of production of components
		almost		
		not at all	x	
	did	absolutely		operate the machines for production of components
		almost		
		not at all	x	
the production of components	did	absolutely		optimise the skills and knowledge of residents
		almost		
		not at all	x	

complete	ok	next		

results	community particip.	53	construction

before the project (before and/or after the disaster):
n/a

within the project:				
Assesses the capacity of residents to actively participate in construction activities for their own dwelling				
residents	did	absolutely almost not at all	 x 	work in assembly of construction components
	did	absolutely almost not at all	 x 	learn the method of construction
	did	absolutely almost not at all	 x 	get remunerated (money, food or property) for labor force
members of the family	did	absolutely almost not at all	 x 	have the option to work in the construction field

complete	ok	next		

results	community particip.	54	individual responsibility of decision making

before the project (before and/or after the disaster):
n/a

within the project:				
Assesses the level of responsibility of decision making				
residents	were	absolutely		responsible for registering to the project (or program)
		almost		
		not at all	x	
	were	absolutely		responsible for applying for the services and products offered
		almost		
		not at all	x	
	were	absolutely		responsible for completing the house
		almost		
		not at all	x	
	were	absolutely		responsible for the use of funding
		almost		
		not at all	x	
	were	absolutely		responsible for obtaining disaster-resistance standards
		almost		
		not at all	x	
	were	absolutely		responsible for obtaining and using information and know-how
		almost		
		not at all	x	
	were	absolutely		responsible for selecting where to invest the resources
		almost		
		not at all	x	

complete	ok	next		

impacts	project goals	55	debt

before the project (before and/or after the disaster):
n/a

within the project:				
the debt acquired by local organisations or the national government to develop the project. A low debt resulting from the project is considered as a potential positive effect of the project				
the debt resulting from the project	was	an insignificant a reasonable a very high	x 	burden for local organisations or the national government

complete	ok	next		

impacts	project goals	56	environmental impact

before the project (before and/or after the disaster):

n/a

within the project:

the positive and negative impacts of the project on the environment. This might include negative impacts due to the sprawl of urbanisation, the over exploitation of indigenous materials, and the effects of the disruption of public infrastructure (particularly sewage systems). This indicator denotes the assessment of long-term consequences on the sustainability of the project

the project	not at all		had a negative effect in urban sprawl
	almost		
	absolutely	x	
	not at all	x	had a negative effect of over exploitation of natural resources
	almost		
	absolutely		
	not at all	x	had a negative effect in natural sources of water
	almost		
	absolutely		
	not at all	x	had a negative effect in natural forests
	almost		
	absolutely		
	not at all		had a negative effect in public health
	almost		
	absolutely	x	
	absolutely		contributed to urban/rural organisation and consolidation
	almost		
	not at all	x	
	absolutely		reduced the negative effects of the disaster in the environment
	almost		
	not at all	x	
	absolutely		reduced the negative effects of the disaster in public health
	almost		
	not at all	x	

complete	ok	next		

impacts	project goals	57	recovery of normal activities

before the project (before and/or after the disaster):
n/a

within the project:			
the performance in terms of time for the recovery of normal activities. It includes assessing the time it took for the majority of the community to resume daily activities (going to work, to school, do normally domestic activities, etc.)			
the project	absolutely		facilitated the recovery of: people going to work
	almost		
	not at all	x	
	absolutely		facilitated the recovery of: people going to school
	almost		
	not at all	x	
	absolutely		facilitated the recovery of: people doing domestic activities
	almost		
	not at all	x	
	absolutely		facilitated the recovery of people: doing recreational activities
	almost		
	not at all	x	

complete	ok	next		

impacts	project goals	58	physical resistance to hazards

before the project (before and/or after the disaster):

n/a

within the project:

cumulative performance in terms of the overall resistance to natural hazards. It includes not only the resistance of the original units (as built during the project) but also the resistance of later additions and modifications to the original units. This indicator compiles the general resistance to hazards due to safe location, exposure to danger, awareness and mitigation of possible risks, implementation of better building codes and standards, and in general all the structural and non structural risks of unsafe conditions. It denotes the capacity of the project to guarantee long term safe conditions of housing

original houses	were	absolutely		safe (resistance to natural hazards) at the mid-term
		almost		
		not at all	x	
modified houses (inc. additions)	were	absolutely		safe (resistance to natural hazards) at the mid-term
		almost		
		not at all	x	
infrastructure	was	absolutely	x	safe (resistance to natural hazards) at the mid-term
		almost		
		not at all		
other buildings and facilities	were	absolutely	x	safe (resistance to natural hazards) at the mid-term
		almost		
		not at all		

complete	ok	next		

impacts	project goals	59	transfer of better building practices

before the project (before and/or after the disaster):

n/a

within the project:

the performance in the assimilation of better building practices, particularly in self-help and this including better use of materials, improvements in local technologies, general awareness of risks, respect of building codes and standards, etc. This variable indicates the capacity of the project to reduce the long-term physical vulnerabilities of the community (particularly if a great percentage of regular housing is user-made)

user-made constructions after the project	were	absolutely		safe (resistance to natural hazards)
		almost		
		not at all	x	
construction technologies	were	absolutely		improved in user-made constructions after the disaster
		almost		
		not at all	x	
user-made constructions after the project	were	absolutely		vigilant of construction codes and standards
		almost		
		not at all	x	
proper maintenance	was	absolutely		conducted to housing structures
		almost		
		not at all	x	

complete	ok	next		

impacts	project goals	60	institutional capacity and development

before the project (before and/or after the disaster):
n/a

within the project:				
the performance of the project in reinforcing the administrative methods, expertise, know-how, and management tools of local authorities for disaster management. This indicator denotes the capacity of the project to increase the level of development from the local authorities point of view. It includes assessing: (i) the implementation or not of programs of education, training, administrative cooperation and information targeted to local authorities; and (ii) the level of participation of regular administrative units (municipalities, regular public entities, etc.) in the reconstruction project. The creation of temporary public entities with the exclusive mandate of dealing with reconstruction activities - which dissolve once reconstruction is finished - is considered as a potential cause of loss of the know how and expertise gained through the development of the project				
education and training programs	were	absolutely almost not at all	x	implemented for local authorities and administrative units
local administrative units		absolutely almost not at all	x	participated in the design and management of the project
temporary entities for reconstruction	were	not at all almost absolutely	x	dissolved after the project
new administrative methods and plans	were	not at all almost absolutely	x	implemented after the project
local administrative units		absolutely almost not at all	x	had responsibility of the good development of the project

complete	ok	next		

impacts	project goals	61	equality of gender and minorities

before the project (before and/or after the disaster):

n/a

within the project:

the performance of the project in selecting the beneficiaries of the project. It highlights possible segregation by gender, race, social status, religious affiliation, etc. It may also denote the selection of beneficiaries according to other variables such as: capacity of acquiring debts, family income, tenure of civil address or registered ID, land or home ownership, legal occupation of land, tenure of titles of legal property, location in safe areas, etc. This indicator denotes the performance of the project in terms of covering and scope

a fair method of selection of beneficiaries	was	absolutely almost not at all	 x	implemented in the project
women and men	had	absolutely almost not at all	x 	the same rights to obtain products and services in the project
residents from different races	had	absolutely almost not at all	x 	the same rights to obtain products and services in the project
residents from different social classes	had	absolutely almost not at all	x 	the same rights to obtain products and services in the project
residents with different religious affiliation	had	absolutely almost not at all	x 	the same rights to obtain products and services in the project
people without civil ID or not registered	had	absolutely almost not at all	x 	the same rights to obtain products and services in the project
residents of the lowest economic levels	were	absolutely almost not at all	x 	included as beneficiaries of products and services
people without legal tenure	were	absolutely almost not at all	x 	included as beneficiaries of products and services
non land owners or home owners	were	absolutely almost not at all	x 	included as beneficiaries of products and services
people located in unsafe areas	were	absolutely almost not at all	x 	included as beneficiaries of products and services

complete	ok	next		

impacts	project goals	62	all settlements in safe areas

before the project (before and/or after the disaster):
n/a

within the project:				
the contribution of the project to eliminate housing located in dangerous areas. It highlights the permanence of squatting settlements in risk-prone areas and remaining risks due to location. It denotes the capacity of the project to achieve the ultimate goal of eliminating physical vulnerability of housing				
housing in the region	was	absolutely almost not at all	 x	built in safe areas
the project		absolutely almost not at all	 x	contributed to reduce settlements in risk-prone areas
		absolutely almost not at all	 x	contributed to reduce the physical vulnerability of housing
a similar disaster	is	absolutely almost not at all	 x	unlikely to happen to the same population in the same region

complete	ok	start		

FIPs of the CGOs' project in Colombia

inputs	multi organisation	1	the capacity to attract funds for the project

before the project (before and/or after the disaster):

n/a

within the project:

capacity to obtain donations and/or financing. It assesses the amount of resources obtained vs. the initial estimation and budget

the capacity to attract funds	absolutely	x	permitted to collect the funds required according to the initial estimations
	almost		
	not at all		
	absolutely	x	permitted to get on time the funds that were required
	almost		
	not at all		
	absolutely	x	guaranteed a continuous investment of resources
	almost		
	not at all		
	absolutely	x	permitted to target an appropriate level of quality in the outputs offered
	almost		
	not at all		
	absolutely	x	permitted to deal with a complete series of outputs
	almost		
	not at all		
	absolutely	x	permitted the organisation an adequate independence of decision making
	almost		
	not at all		

complete	ok	next		

next

inputs	multi organisation	2	level of integration with the community

before the project (before and/or after the disaster):
n/a

within the project:				
directly related with the definition of integration used here. Includes the capacity of the organisation to develop horizontal relations with members of the community, beneficiaries and grass roots organisations in order to accomplish common objectives				
local residents		absolutely	x	had an active participation within the multi-organisation
		almost		
		not at all		
local associations		absolutely	x	had an active participation within the multi-organisation
		almost		
		not at all		
local authorities		absolutely		had an active participation within the multi-organisation
		almost		
		not at all	x	
grass-roots NGOs		absolutely		had an active participation within the multi-organisation
		almost	x	
		not at all		
local contractors		absolutely	x	had an active participation within the multi-organisation
		almost		
		not at all		
the organis. in charge of the project	had	completely	x	established relations in the region before the beginning of the project
		partially		
		not		

complete	ok	next		

inputs	multi organisation	3	level of integration between organisations

before the project (before and/or after the disaster):

n/a

within the project:

directly related with the definition of integration used here. Includes the capacity of the organisation to develop horizontal and vertical relations with banks, NGOs, private companies, etc. in order to accomplish and reinforce common objectives

individual objectives of each organis.	were	absolutely	x	coordinated to achieve a common objective
		almost		
		not at all		
the organisation in charge of the project	had	enough	x	links with other organis. to work together towards a common objective
		almost enough		
		not enough		
integration with other organisations		absolutely	x	resulted in appropriate cooperation
		almost		
		not at all		
integration with other organisations		absolutely	x	facilitated collecting funds and obtaining financing
		almost		
		not at all		
the relations between the organisations	were	absolutely	x	consolidated when needed
		almost		
		not at all		

complete	ok	next		

inputs	multi organisation	4	level of differentiation between organisations

before the project (before and/or after the disaster):

n/a

within the project:

based on the assessment of corporate performance as proposed by Lawrence and Lorsh. Includes the assessment of the level of definition of different roles among the organisations of the project team. The performance decreases if activities made by different organisations overlapped incurring in redundancy, too much assistance, or repetition

the differentiation of responsibilities	was	absolutely	x	defined in a clear manner
		almost		
		not at all		
the differentiation of responsibilities		never	x	overlapped incurring in repetition and redundancy
		sometimes		
		always		
the differentiation of responsibilities		absolutely	x	took advantage of the strengths and weaknesses of each organisation
		almost		
		not at all		
the differentiation of responsibilities		absolutely	x	contributed to attain a common objective
		almost		
		not at all		
the differentiation of responsibilities	was	absolutely	x	set up when needed
		almost		
		not at all		

complete	ok	next		

inputs	multi organisation	5	project's administrative costs

before the project (before and/or after the disaster):

n/a

within the project:

the level of optimization of economic resources for the benefit of beneficiaries. Assessed as a the percentage of the project's budget. Lower administrative costs = better performance

project's administrative costs	were	absolutely	x	reduced through the optimisation of local resources
		almost		
		not at all		
	were	absolutely	x	reduced by minimising the costs of expatriate officers
		almost		
		not at all		
	were	absolutely	x	justified by having reduced overall costs for the project
		almost		
		not at all		
		absolutely	x	favored the maximum use of money for the benefit of beneficiaries
		almost		
		not at all		

complete	ok	next		

inputs	multi organisation	6	the capacity of the system to adapt to the environm.

before the project (before and/or after the disaster):
n/a

within the project:				
the capacity to react to the risks and opportunities of the environment at the social, economic and political levels. Includes an assessment of the influence of the environment in the objectives targeted by the multi-organisation				
the objectives of the project	were	not at all somehow greatly	x	affected by negative unexpected changes of the environment
the risks inherent to the environment	were	absolutely almost not at all	x	assessed by the multi-organisation during the project
the organis. responsible of the project		absolutely almost not at all	x	anticipated a plan to minimise (share) financial risks
the organis. responsible of the project		absolutely almost not at all	x	took advantage of unexpected opportunities in the environment
when required, changes in the project	were	absolutely almost not at all	x	implemented
the organi. responsible of the project	was	absolutely almost not at all	x	prepared to work in a hostile environment

complete	ok	next		

inputs	management tools	7	a census of local residents

before the project (before and/or after the disaster):

n/a

within the project:

dams, barriers and retaining walls built to protect housing from natural hazards (landslides, floods, fires, etc). Safe conditions and reduction of risks for the population are assessed in this indicator

a census of local residents	was			not conducted (end)
				conducted by a different program/organisation (end)
			x	conducted as part of the project
	was	absolutely		inclusive of diversity and everybody in the community
		almost	x	
		not at all		
	was	absolutely	x	conducted and used on time
		almost		
		not at all		
	was	absolutely	x	used to adapt the project to the real needs of the population
		almost		
		not at all		
	was	absolutely	x	the appropriate strategy (management tool) to use
		almost		
		not at all		

complete	ok	next		

inputs	management tools	8	previous studies (typologies, techniques, etc)

before the project (before and/or after the disaster):

n/a

within the project:

pre-project technical studies (pre- or post-disaster) to collect information about local living conditions, architectural typologies, construction techniques, etc.

previous studies (typologies, techniques, etc)	were			not conducted (end)
				conducted by a different program/organisation (end)
			x	conducted as part of the project
	were	absolutely	x	useful to discover new information about local characteristics
		almost		
		not at all		
	were	absolutely	x	conducted and used on time
		almost		
		not at all		
	were	absolutely	x	used to adapt the project to local characteristics
		almost		
		not at all		
	were	absolutely	x	properly reported or published for future reference
		almost		
		not at all		
	were	absolutely	x	the appropriate strategy (management tool) to use
		almost		
		not at all		

complete	ok	next		

inputs	management tools	9	surveys of people's needs

before the project (before and/or after the disaster):

n/a

within the project:

post-disaster assessment of damages and real needs (through questionnaires, visits, meetings with the community, etc.)

surveys of people's needs	were			not conducted (end)
				conducted by a different program/organisation (end)
			x	conducted as part of the project
	were	absolutely		useful to reveal new information about residents expectations
		almost	x	
		not at all		
	were	absolutely	x	conducted and used on time
		almost		
		not at all		
	were	absolutely	x	used to adapt the project to real needs
		almost		
		not at all		
	were	absolutely		properly reported or published for future reference
		almost	x	
		not at all		
	were	absolutely	x	the appropriate strategy (management tool) to use
		almost		
		not at all		

complete	ok	next		

inputs	management tools	10	consultation with the community

before the project (before and/or after the disaster):

n/a

within the project:

assessment of the users' opinions and suggestions regarding living conditions, expectations, and requirements

consultation with the community	was			not conducted (end)
				conducted by a different program/organisation (end)
			x	conducted as part of the project
		absolutely		contributed in the beginning to set up the priorities of the project
		almost	x	
		not at all		
		absolutely		permitted to make changes and adapt the project during the process
		almost	x	
		not at all		
		absolutely		enhanced diversity and multiplicity
		almost	x	
		not at all		
		absolutely		permitted a fair representation of all the residents
		almost		
		not at all	x	
	was		x	intended to design the project
				intended to adapt the existing project
				intended to present the project to residents

complete	ok	next		

inputs	local resources	11	the capacity of residents to work in construction

before the project (before and/or after the disaster):

n/a

within the project:

indicates availability of time, knowledge and interest to work in construction. It assesses the users' availability of time to work in construction; users' skills and know how in building practices; and users' interest to invest their time and expertise in construction

beneficiaries of the project	had	sufficient		knowledge about construction practices
		relative	x	
		insufficient		
	had	sufficient	x	availability of time to work in construction
		relative		
		insufficient		
	had	sufficient	x	interest to work in construction activities
		relative		
		insufficient		
	had	sufficient	x	guidance to work in construction activities
		relative		
		insufficient		
	had	sufficient	x	physical conditions to work in construction activities
		relative		
		insufficient		

complete	ok	next		

inputs	local resources	12	materials and equipment available

before the project (before and/or after the disaster):

n/a

within the project:

the capacity to use indigenous materials (wood, sand, earth, palm leaves, bamboo, clay, etc.) for the production of construction components and the availability of tools and equipment for construction

local indigenous materials	were	absolutely	x	available in the region
		almost		
		not at all		
		absolutely	x	corresponded to the skills of the affected population
		almost		
		not at all		
		absolutely		safe for the environment (preventing degradation of natural resources)
	were	almost	x	
		not at all		
tools and equipment		absolutely	x	available in the region
	were	almost		
		not at all		
		absolutely	x	corresponded to the skills of the affected population
		almost		
		not at all		

complete	ok	next		

outputs	financial / funding	13	tax incentives for companies / individuals

before the project (before and/or after the disaster):

n/a

within the project:

the implementation of tax incentives to attract investment and economic recovery after the disaster. Tax incentives are targeted to promote the creation of employement opportunties, new businesses and the development of local industries. Equally, tax incentives to individuals during a certain period of time ease the financial burden of recovery of the affecetd families

tax incentives	were			not offered at all to the affected population (end)
			x	offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	financial / funding	14	loans for housing

before the project (before and/or after the disaster):

pre-disaster capacity of local residents to have access to banking loans and mortgages for housing

loans for housing	were	widely		accessible to residents before the project
		not widely	x	
	were	absolutely		appropriate for the needs of the population
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

the implementation of loans for repairs, self-help initiatives or buying a new house. This indicator denotes the confidence of the financial system in the affected community and the capacity of the users to enter into the regular banking system

loans for housing	were			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely	x	achieved as planned
		almost		
		not at all		
	were	absolutely	x	on time when needed
		almost		
		not at all		
	were	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely	x	offered to the right people who needed them
		almost		
		not at all		
	were	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely	x	enough to cover the needs of the population
		almost		
		not at all		

complete	ok	next		

outputs	financial / funding	15	subsidies for housing

before the project (before and/or after the disaster):

pre-disaster capacity of local residents to have access to governmental subsidies for housing

subsidies for housing	were	widely		accessible to residents before the project
		not widely	x	
	were	absolutely		appropriate for the needs of the population
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

non-reimbursable financial aid for repairs, purchase of a new house or self-help

subsidies for housing	were			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely	x	achieved as planned
		almost		
		not at all		
	were	absolutely	x	on time when needed
		almost		
		not at all		
	were	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely	x	offered to the right people who needed them
		almost		
		not at all		
	were	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely	x	enough to cover the needs of the population
		almost		
		not at all		

complete	ok	next		

outputs	financial / funding	16	loans for infrastructure or others

before the project (before and/or after the disaster):

pre-disaster capacity of local residents to have access to regular loans for individual or familial investment

loans for infrastructure or others	were	widely		accessible to residents before the project
		not widely	x	
	were	absolutely		appropriate for the needs of the population
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

loans for infrastructure repair, for buildings related with sources of income (for individual shops, small industries, etc), or other initiatives for recovery. This indicator denotes the confidence of the financial system in the affected community and the capacity of the users to enter into the regular banking system

loans for infrastructure or others	were			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely	x	achieved as planned
		almost		
		not at all		
	were	absolutely	x	on time when needed
		almost		
		not at all		
	were	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely	x	offered to the right people who needed them
		almost		
		not at all		
	were	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely	x	enough to cover the needs of the population
		almost		
		not at all		

complete	ok	next		

outputs	financial / funding	17	subsidies for infrastructure or others

before the project (before and/or after the disaster):

pre-disaster capacity of local residents to have access to governmental subsidies for individual or familial investment

subsidies for infrastructure or others	were	widely		accessible to residents before the project
		not widely	x	
	were	absolutely		appropriate for the needs of the population
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

non-reimbursable financial aid for infrastructure repair, for buildings related with sources of income (for individual shops, small industries, etc), or for other initiatives for recovery

subsidies for infrastructure or others	were			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely	x	achieved as planned
		almost		
		not at all		
	were	absolutely	x	on time when needed
		almost		
		not at all		
	were	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely	x	offered to the right people who needed them
		almost		
		not at all		
	were	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely	x	enough to cover the needs of the population
		almost		
		not at all		

complete	ok	next		

outputs	infrastructure	18	dams, barriers, retaining walls

before the project (before and/or after the disaster):

assesses if dams, barriers and retaining walls existed to protect housing from natural hazards (landslides, floods, fires, etc) and if this infrastructure guaranteed security and did not represent risks for the population

dams, barriers, retaining walls	were	absolutely		safe to protect residents before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

dams, barriers and retaining walls built to protect housing from natural hazards (landslides, floods, fires, etc). Safe conditions and reduction of risks for the population are assessed in this indicator

dams, barriers, retaining walls	were			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely	x	achieved as planned
		almost		
		not at all		
	were	absolutely	x	on time when needed
		almost		
		not at all		
	were	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely	x	offered to the right people who needed them
		almost		
		not at all		
	were	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely	x	safe to protect residents
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all	x	

complete	ok	next		

outputs	infrastructure	19	roads

before the project (before and/or after the disaster):

assesses if roads (urban or rural) were appropriate and enough to cover the needs of housing in the community and the risks that they might represent for the population. It also assesses the damages in roads caused by the disaster

roads	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely		safe in case of emergency and danger
		not completely	x	
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of roads. The indicator applies at two levels: public infrastructure (for the benefit of the community) and individual infrastructure (in private property for the benefit of its owners). Individual infrastructure includes the activities and construction required for the connection to public services. These indicators illustrate the sustainability of the project and the consideration of long term effects in public health and safety

roads	were			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely	x	achieved as planned
		almost		
		not at all		
	were	absolutely	x	on time when needed
		almost		
		not at all		
	were	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely	x	offered to the right people who needed them
		almost		
		not at all		
	were	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely	x	safe in case of emergency and danger
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost	x	
		not at all		

complete	ok	next		

outputs	infrastructure	20	water supply

before the project (before and/or after the disaster):

assesses if water supply was appropriate and enough to cover the needs of housing in the community and the risks that it might represent for the population. It also assesses the damages caused by the disaster

water supply infrastructure	was	absolutely	x	appropriate for the context before the project
		not completely		
	was	absolutely		enough to cover the needs of the population
		not completely	x	
	was	absolutely	x	safe for public health
		not completely		
	was	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of water supply infrastructure. The indicator applies at two levels: public infrastructure (for the benefit of the community) and individual infrastructure (in private property for the benefit of its owners). Individual infrastructure includes the activities and construction required for the connection to public services. These indicators illustrate the sustainability of the project and the consideration of long term effects in public health and safety

water supply infrastructure	was			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	was	absolutely	x	achieved as planned
		almost		
		not at all		
	was	absolutely	x	on time when needed
		almost		
		not at all		
	was	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely	x	offered to the right people who needed it
		almost		
		not at all		
	was	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely	x	safe for public health
		almost		
		not at all		
	was	absolutely	x	enough to cover the needs of the population
		almost		
		not at all		

complete	ok	next		

outputs	infrastructure	21	electricity

before the project (before and/or after the disaster):

assesses if electricicty supply was appropriate and enough to cover the needs of housing in the community and the risks that it might represent for the population. It also assesses the damages caused by the disaster

electricity infrastructure	was	absolutely	x	appropriate for the context before the project
		not completely		
	was	absolutely		enough to cover the needs of the population
		not completely	x	
	was	absolutely		safe considering local codes
		not completely	x	
	was	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of infrastructure for electricity supply. The indicator applies at two levels: public infrastructure (for the benefit of the community) and individual infrastructure (in private property for the benefit of its owners). Individual infrastructure includes the activities and construction required for the connection to public services. These indicators illustrate the sustainability of the project and the consideration of long term effects in public health and safety

electricity infrastructure	was			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	was	absolutely	x	achieved as planned
		almost		
		not at all		
	was	absolutely	x	on time when needed
		almost		
		not at all		
	was	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely	x	offered to the right people who needed it
		almost		
		not at all		
	was	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely	x	safe considering local codes
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all	x	

complete	ok	next		

outputs	infrastructure	22	sewage

before the project (before and/or after the disaster):

assesses if the sewage system was appropriate and enough to cover the needs of housing in the community and the risks that it might represent for the population. It also assesses the damages caused by the disaster

sewage infrastructure	was	absolutely	x	appropriate for the context before the project
		not completely		
	was	absolutely		enough to cover the needs of the population
		not completely	x	
	was	absolutely	x	safe for public health
		not completely		
	was	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of sewage infrastructure. The indicator applies at two levels: public infrastructure (for the benefit of the community) and individual infrastructure (in private property for the benefit of its owners). Individual infrastructure includes the activities and construction required for the connection to public services. These indicators illustrate the sustainability of the project and the consideration of long term effects in public health and safety

sewage infrastructure	was			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	was	absolutely	x	achieved as planned
		almost		
		not at all		
	was	absolutely	x	on time when needed
		almost		
		not at all		
	was	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely	x	offered to the right people who needed it
		almost		
		not at all		
	was	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely	x	safe for public health
		almost		
		not at all		
	was	absolutely	x	enough to cover the needs of the population
		almost		
		not at all		

complete	ok	next		

outputs	infrastructure	23	telephone

before the project (before and/or after the disaster):

assesses if the infrastructure for telephone system was appropriate and enough to cover the needs of housing in the community. It also assesses the damages caused by the disaster

infrastructure for telephone	was	absolutely		appropriate for the context before the project
		not completely	x	
	was	absolutely		enough to cover the needs of the population
		not completely	x	
	was	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of infrastructure for telephone systems. The indicator applies at two levels: public infrastructure (for the benefit of the community) and individual infrastructure (in private property for the benefit of its owners). Individual infrastructure includes the activities and construction required for the connection to public services. These indicators illustrate the sustainability of the project and the consideration of long term effects in public health and safety

infrastructure for telephone	was			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	was	absolutely	x	achieved as planned
		almost		
		not at all		
	was	absolutely	x	on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost	x	
		not at all		
	was	absolutely		offered to the right people who needed it
		almost	x	
		not at all		
	was	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all	x	

complete	ok	next		

outputs	community services	24	schools

before the project (before and/or after the disaster):

pre-project conditions of facilities

schools	were	absolutely	x	appropriate for the context before the project
		not completely		
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely		safe (resistance to hazards)
		not completely	x	
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of facilities

schools	were			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely	x	achieved as planned
		almost		
		not at all		
	were	absolutely	x	on time when needed
		almost		
		not at all		
	were	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely	x	offered to the right people who needed them
		almost		
		not at all		
	were	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely	x	safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost	x	
		not at all		

complete	ok	next		

outputs	community services	25	health centers

before the project (before and/or after the disaster):

pre-project conditions of facilities

health centers	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely	x	safe (resistance to hazards)
		not completely		
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of facilities

health centers	were			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely	x	achieved as planned
		almost		
		not at all		
	were	absolutely	x	on time when needed
		almost		
		not at all		
	were	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely	x	offered to the right people who needed them
		almost		
		not at all		
	were	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely	x	safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost	x	
		not at all		

complete	ok	next		

outputs	community services	26	community centers / religious bldg.

before the project (before and/or after the disaster):

pre-project conditions of facilities

community centers / religious bldg.	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely	x	safe (resistance to hazards)
		not completely		
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of facilities

community centers / religious bldg.	were			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely	x	achieved as planned
		almost		
		not at all		
	were	absolutely	x	on time when needed
		almost		
		not at all		
	were	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely	x	offered to the right people who needed them
		almost		
		not at all		
	were	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely	x	safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost	x	
		not at all		

complete	ok	next		

outputs	community services	27	police / fire stations

before the project (before and/or after the disaster):

pre-project conditions of facilities

police / fire stations	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely	x	safe (resistance to hazards)
		not completely		
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of facilities

police / fire stations	were			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely	x	achieved as planned
		almost		
		not at all		
	were	absolutely	x	on time when needed
		almost		
		not at all		
	were	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely	x	offered to the right people who needed them
		almost		
		not at all		
	were	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely	x	safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all	x	

complete	ok	next		

outputs	housing	28	new lots

before the project (before and/or after the disaster):

the pre-disaster level of access to land property; and/or pre- and post-disaster risks associated with the tenure of land, particularly due to location in zones of risk

lots	were	absolutely		appropriate for the context before the project
		not completely	x	
land tenure	was	absolutely		enough to cover the needs of the population
		not completely	x	
land	was	absolutely		safe (resistance to hazards)
		not completely	x	
land tenure	was	widely		accessible to residents
		not widely	x	

within the project:

initiatives targeted to increase the residents' capacity to acquire safe lots for housing; including loans or subsidies given for purchasing land or the direct donation of lots

new lots	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	housing	29	emergency shelters

before the project (before and/or after the disaster):

pre-disaster arrangements and planning made by the organisations to adequately respond to the emergency. It represents the access of the community to contingency plans by the civil defense, fire departments, Red Cross, etc.

emergency shelters	were	absolutely		planned, before the disaster, through contingency plans
		not completely	x	
emergency organisations	were	absolutely		prepared for a housing emergency
		not completely	x	
authorities	were	absolutely		prepared for a housing emergency
		not completely	x	
info about contingency plans	was	widely		accessible to residents before the disaster
		not widely	x	

within the project:

implementation of an emergency sheltering plan; including provision of tents, plastics or other materials to build shelters for the first days after the disaster

emergency shelters	were			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely	x	achieved as planned
		almost		
		not at all		
	were	absolutely	x	on time when needed
		almost		
		not at all		
	were	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely	x	offered to the right people who needed them
		almost		
		not at all		
	were	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely	x	safe to short-term protection of residents
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all	x	

complete	ok	next		

outputs	housing	30	temporary housing

before the project (before and/or after the disaster):

pre-disaster arrangements and planning made by authorities and local NGOs to adequately respond to the requireness for transitory housing

temporary housing	was	absolutely		planned, before the disaster in urban plans
		not completely	x	
emergency organisations	were	absolutely		prepared for building transitory housing
		not completely	x	
authorities	were	absolutely		prepared for building transitory housing
		not completely	x	
info about temporary housing plans	was	widely		accessible to residents before the disaster
		not widely	x	

within the project:

this might include the implementation of: (i) temporary units (i.e. pre-fab and winterised units); (ii) adapted temporary housing (public facilities or rented apartments); or (iii) self-provided temporary housing (homes of families / friends, user-built shelters, or second homes)

temporary housing	was			not offered at all to the affected population (end)
			x	offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe for mid-term protection of residents
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	housing	31	new houses

before the project (before and/or after the disaster):

the pre-disaster level of access to housing (or the contrary: the level of housing shortage) and post-disaster homelessness caused by the disaster

houses	were	absolutely		accessible to all residents before the disaster
		not completely	x	
new houses	were	absolutely		unnecessary after the disaster
		not completely	x	

within the project:

initiatives targeted to facilitate the acquisition of new permanent housing, including (if necessary) relocation of residents living in dangerous conditions. Permanent new housing can be obtained: (i) through the provision of finished units; (ii) by facilitating and organising self-help construction; or (iii) by facilitating and organising the purchase of new housing existing in the market

new houses	were			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all	x	
	were	absolutely		on time when needed
		almost	x	
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost	x	
		not at all		
	were	absolutely	x	offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost	x	
		not at all		
	were	absolutely	x	safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost	x	
		not at all		

complete	ok	next		

outputs	housing	32	reconstructed houses

before the project (before and/or after the disaster):

the pre- and post-disaster risks of collapse of housing structures due to one or some of the following reasons: (i) lack of maintenance; (ii) use of inadequate materials; (iii) use of inadequate technologies; (iv) unsafe additions and structural modifications to housing; (v) insufficient construction codes and standards

houses	were	absolutely		functional after the disaster
		not completely	x	
	were	absolutely	x	appropriate for the needs of the population
		not completely		
	were	absolutely		safe after the disaster
		not completely	x	

within the project:

the reconstruction of affected structures, including minor repairs and major reconstruction

the reconstruction of affected houses	was			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	was	absolutely	x	achieved as planned
		almost		
		not at all		
	was	absolutely	x	on time when needed
		almost		
		not at all		
	was	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely	x	offered to the right people who needed it
		almost		
		not at all		
	was	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely	x	safe for long-term protection of residents
		almost		
		not at all		
	was	absolutely	x	enough to cover the needs of the population
		almost		
		not at all		

complete	ok	next		

outputs	industry /employm.	33	bldgs/infras. for industry & income generation

before the project (before and/or after the disaster):

the pre-disaster level of access to sources of income; and/or pre- and post-disaster risks associated with the buildings and infrastructure related with income generation, particularly the risks of collapse, destruction of infrastructure, destruction of plantations, machinery or equipment, etc.

bldgs/infras. for industry & income generation	were	absolutely	x	appropriate for the context before the project
		not completely		
	were	widely	x	accessible to residents
		not widely		
	were	absolutely		safe (resistance to hazards)
		not completely	x	
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

the construction of buildings and infrastructure associated with the generation of income and employment at the scale of single families or small clusters (excluding the reconstruction of large industries/companies). It might include the reconstruction of shops, small industries, small scale infrastructure for production, processing or agriculture activities, etc., assessing the consideration of long-term needs for economic recovery, the capacity of the community to become economically independent, and in general, the sustainability of the project. Only physical construction is considered, not including functioning and management of facilities

bldgs/infras. for industry & income generation	were			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely	x	achieved as planned
		almost		
		not at all		
	were	absolutely	x	on time when needed
		almost		
		not at all		
	were	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely	x	offered to the right people who needed them
		almost		
		not at all		
	were	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely	x	safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely	x	enough to cover the needs of the population
		almost		
		not at all		

complete	ok	next		

outputs	industry /employm.	34	unemployment subsidies

before the project (before and/or after the disaster):

pre-disaster access to regular governmental unemployment subsidies (equivalent to welfare)

unemployment subsidies	were	widely		accessible to residents
		not widely	x	
	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

initiatives targeted to the implementation of subsidies for people that have lost their jobs or sources of income during the disaster. This indicator denotes the consideration of short-term needs for economic recovery

unemployment subsidies	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	others	35	rescue

before the project (before and/or after the disaster):

the pre-disaster capacity of local institutions (the civil defense, the police, the army, the local NGOs, the local Red Cross, etc.) to speedily and effectively react to the destruction

local organisations	were	absolutely		on time to conduct emergency and rescue
		not completely	x	
		absolutely		effectively conducted contingency and rescue
		not completely	x	
external aid	was	absolutely		unnecessary for rescue activities
		not completely	x	

within the project:

the implementation of rescue activities

rescue activities	were			not offered at all to the affected population (end)
			x	offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	others	36	psychological aid

before the project (before and/or after the disaster):

pre-disaster access to psychological aid. Even though this is a difficult aspect to identify in urban contexts it is easier to identify as being absent in most of rural contexts

psychological aid	was	widely		accessible to residents
		not widely	x	
	was	absolutely		appropriate for the needs of the population
		not completely	x	
	was	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

initiatives targeted to provide psychological aid to the affected residents. This might include individual or group therapies, giving advice and information in newspapers or magazines

psychological aid	was			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	was	absolutely	x	achieved as planned
		almost		
		not at all		
	was	absolutely	x	on time when needed
		almost		
		not at all		
	was	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely	x	offered to the right people who needed it
		almost		
		not at all		
	was	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all	x	

complete	ok	next		

outputs	others	37	food

before the project (before and/or after the disaster):

pre-disaster access to food, it highlights pre-disaster and post-disaster levels of malnutrition

food	was	absolutely		accessible to residents
		not completely	x	
	was	absolutely	x	appropriate for the needs of the population
		not completely		
	was	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

initiatives targeted to provide food to the affected residents in the first days after the disaster.

food	was			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	was	absolutely	x	achieved as planned
		almost		
		not at all		
	was	absolutely	x	on time when needed
		almost		
		not at all		
	was	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely	x	offered to the right people who needed it
		almost		
		not at all		
	was	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all	x	

complete	ok	next		

outputs	others	38	medical aid

before the project (before and/or after the disaster):

pre- and post-disaster level of access to regular medical care. This vulnerability might consider the availability of health centers in the region and a qualitative assessment of the capacity of residents to gain access to health insurances

medical aid	was	widely		accessible to residents
		not widely	x	
	was	absolutely		appropriate for the needs of the population
		not completely	x	
	was	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

initiatives targeted to the provision of medical assistance in the first days after the disaster

medical aid	was			not offered at all to the affected population (end)
			x	offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	others	39	temporary infrastructure

before the project (before and/or after the disaster):

the capacity of institutions to react to the destruction of public services and infrastructure, particularly the reaction of governmental organizations in charge of public services and roads

temporary infrastructure	was	absolutely		planned in contingency plans
		not completely	x	
local organisations	were	absolutely		prepared to react to the destruction of infrastructure
		not completely	x	
external aid	was	absolutely		unnecessary after the disaster
		not completely	x	

within the project:

initiatives targeted to the implementation of temporary electrical and telephone systems, temporary water supply, and temporary bridges, dams or any other infrastructure required to guarantee the safety and recovery of residents. This indicator assesses the capacity of residents to quickly resume daily activities

temporary infrastructure	was			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	was	absolutely	x	achieved as planned
		almost		
		not at all		
	was	absolutely	x	on time when needed
		almost		
		not at all		
	was	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely	x	offered to the right people who needed it
		almost		
		not at all		
	was	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely	x	enough to cover the needs of the population
		almost		
		not at all		

complete	ok	next		

outputs	others	40	education and technical assistance

before the project (before and/or after the disaster):

pre-disaster access to technical education and knowledge. It might include assessing the average access to schooling and informal education in the region

schooling (up to secondary)	was	widely		accessible to residents
		not widely	x	
residents	had	complete		knowledge about construction -related subjects
		insufficient	x	
technical courses and informal education	were	widely		accessible to residents
		not widely	x	

within the project:

the implementation of plans for education and technical assistance. It might include education in disaster prevention, education in better construction practices, formation on leadership, equity, human rights, protection of the environment, etc. and technical assistance for developing better construction practices or for the assembly of construction components

education and technical assistance	was			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	was	absolutely	x	achieved as planned
		almost		
		not at all		
	was	absolutely	x	on time when needed
		almost		
		not at all		
	was	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely	x	offered to the right people who needed it
		almost		
		not at all		
	was	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely	x	enough to cover the needs of the population
		almost		
		not at all		

complete	ok	next		

outputs	others	41	information

before the project (before and/or after the disaster):

pre-disaster access to information related with risks, awareness, contingency and coping activities. It might include assessing the average access to the media (news papers, internet, TV and radio), the existence of campaigns of information and the access to local and external publications

information concerning risks, awareness, etc.	was	widely		accessible to residents
		not widely	x	
campaigns of information to the public	were	widely	x	used in the region
		not widely		
residents	had	widely	x	access to the media in general
		not widely		

within the project:

the implementation of plans for dissemination of information and knowledge regarding the disaster or the reconstruction activities. It might include publications, meetings with the community and information through the media to inform about the causes and effects of the disaster, the projects in action, how to access to the benefits of the project, how to find a job, etc.

information	was			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	was	absolutely	x	achieved as planned
		almost		
		not at all		
	was	absolutely	x	on time when needed
		almost		
		not at all		
	was	absolutely	x	appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely	x	offered to the right people who needed it
		almost		
		not at all		
	was	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely	x	enough to cover the needs of the population
		almost		
		not at all		

complete	ok	next		

results	transfer	42	loans given and subsidies allocated

before the project (before and/or after the disaster):

n/a

within the project:

the performance in the transfer of financial solutions and funding, being useful to identify if the money finally reached the beneficiaries

loans and subsidies offered	were	absolutely	x	allocated as planned
		almost		
		not at all		
	were	absolutely	x	used at an appropriate time (as assumed)
		almost		
		not at all		
	were	absolutely	x	used in the appropriate way (as assumed)
		almost		
		not at all		
	were	absolutely	x	used by the people that needed them (as assumed)
		almost		
		not at all		

complete	ok	next		

results	transfer	43	direct and indirect jobs created

before the project (before and/or after the disaster):
n/a

within the project:				
the consequences in the creation of employment opportunities of having developed the different outputs. It denotes the capacity of the project to facilitate the recovery of the economy and the achievement of the economic independence of the beneficiaries				
new direct and indirect jobs	were	absolutely almost not at all	 x 	enough to facilitate the recovery of the local economy
		absolutely almost not at all	x 	facilitated the economic independence of beneficiaries
	were	absolutely almost not at all	x 	created at the appropriate time
		absolutely almost not at all	x 	represented appropriate working conditions for residents

complete	ok	next		

results	transfer	44	houses occupied

before the project (before and/or after the disaster):

n/a

within the project:

the post-project rate of occupation of dwellings. It is particularly useful to identify the acceptability of the houses provided by the multi-organisation

the houses provided –	were	absolutely	x	occupied by residents
		almost		
		not at all		
	were	absolutely	x	occupied at the appropriate time (as assumed)
		almost		
		not at all		
	were	absolutely	x	used in the appropriate way (as assumed)
		almost		
		not at all		
	were	absolutely	x	used by the people that needed them (as assumed)
		almost		
		not at all		

complete	ok	next		

results	transfer	45	insurance policies taken

before the project (before and/or after the disaster):
n/a

within the project:				
insurance policies are not a common output of reconstruction projects in the context of the selected case studies. However, it is considered here as a consequence of improving the awareness and knowledge of residents and local organisations. Transferring the risks of destruction to insurance companies is considered here as a positive consequence of educating and informing organisations and individuals about the risks of future disasters				
taking insurance policies for housing	was	very much		incremented after the disaster
		slightly		
		not at all	x	
the risks of disasters	was	absolutely		reduced by the government by sharing it with insurance comp.
		almost		
		not at all	x	

complete	ok	next		

results	transfer	46	emergency protocols implemented

before the project (before and/or after the disaster):

n/a

within the project:

emergency protocols are not considered as a common output of reconstruction projects in the context of the selected case studies. However, it is considered here as a consequence of improving the awareness and knowledge of residents and local organisations. Implementing emergency protocols (particularly in urban contexts) is considered here as a positive consequence of educating and informing organisations and individuals about the risks of future disasters

emergency protocols	were	absolutely almost not at all	 x 	implemented in the region among residential areas
contingency plans and emer. protocols	were	absolutely almost not at all	 x 	included in the agenda of local authorities and organisations

complete	ok	next		

results	transfer	47	**increment of land ownership**

before the project (before and/or after the disaster):
n/a

within the project:			
This is a context-sensitive indicator. It is consider in this context as a positive indicator of results as it denotes the capacity of the project to secure safe land for residents at the long run. Increment of land ownership can be due to the provision of new lots, due to the success of loan or subsidies programs or due to the successful legalisation of illegally occupied land			
land ownership	absolutely almost not at all	 x 	increased in the region after the project

complete	ok	next		

results	transfer	48	**increment of home ownership**

before the project (before and/or after the disaster):
n/a

within the project:			
This is a context-sensitive indicator. It is consider in this context as a positive indicator of results. It can be due to construction of new houses, by acquisition of existing housing stock, or by upgrading of squatter settlements and shacks. This indicator denotes the capacity of the project to guarantee secure safe sheltering in the long term			
home ownership	absolutely almost not at all	 x 	increased in the region after the project

complete	**ok**	**next**		

results	community particip	49	design

before the project (before and/or after the disaster):

n/a

within the project:

Assesses the capacity of residents to actively participate in the design of their own dwelling

residents	did	significantly	x	decide the distribution of spaces of their own dwelling
		partially		
		not		
	did	significantly	x	decide the location and orientation of their own dwelling
		partially		
		not		
	did	significantly	x	select the finishes of their own dwelling
		partially		
		not		
	did	significantly	x	decide the size and conditions of the spaces their dwellings
		partially		
		not		
	did	significantly	x	select the technology of the structure and main components
		partially		
		not		
	did	significantly	x	select the construction method to be used
		partially		
		not		

complete	ok	next		

results	community particip	50	management

before the project (before and/or after the disaster):

n/a

within the project:

Assesses the capacity of residents to actively participate in the management of their own dwelling

residents		absolutely	x	could choose whether using self-help or hiring labor force
		almost		
		not at all		
	did	significantly	x	manage the economic resources
		partially		
		not		
	did	significantly	x	manage the contracts of suppliers
		partially		
		not		
	did	significantly	x	determine the schedule and planning of activities
		partially		
		not		
	did	significantly	x	communicate directly with other stakeholders
		partially		
		not		
	did	significantly	x	organise people and resources in the construction field
		partially		
		not		

complete	ok	next		

results	community particip.	51	financing of the project

before the project (before and/or after the disaster):

n/a

within the project:

Assesses the capacity of residents to actively participate in the financing of their own dwelling

residents	did	absolutely almost not at all	x	select the financing system for the project
	did	absolutely almost not at all	x	participate in collecting funds
	did	absolutely almost not at all	x	know the costs of construction and materials
	did	absolutely almost not at all	x	have the option of incurring in expenses directly
	did	absolutely almost not at all	x	have the option to participate with own resources
	did	absolutely almost not at all	x	participate in financing collectively (or as a cooperative)

complete	ok	next		

results	community particip.	52	production of components

before the project (before and/or after the disaster):

n/a

within the project:

Assesses the capacity of residents to actively participate in the production of components for their own dwelling

residents	did	absolutely	x	work in the production of components
		almost		
		not at all		
	did	absolutely	x	learn the technique of production of components
		almost		
		not at all		
	did	absolutely	x	operate the machines for production of components
		almost		
		not at all		
the production of components	did	absolutely	x	optimise the skills and knowledge of residents
		almost		
		not at all		

complete	ok	next		

results	community particip.	53	construction

before the project (before and/or after the disaster):
n/a

within the project:				
Assesses the capacity of residents to actively participate in construction activities for their own dwelling				
residents	did	absolutely	x	work in assembly of construction components
		almost		
		not at all		
	did	absolutely	x	learn the method of construction
		almost		
		not at all		
	did	absolutely		get remunerated (money, food or property) for labor force
		almost		
		not at all	x	
members of the family	did	absolutely	x	have the option to work in the construction field
		almost		
		not at all		

complete	ok	next		

results	community particip.	54	individual responsibility of decision making

before the project (before and/or after the disaster):

n/a

within the project:

Assesses the level of responsibility of decision making

residents	were	absolutely	x	responsible for registering to the project (or program)
		almost		
		not at all		
	were	absolutely	x	responsible for applying for the services and products offered
		almost		
		not at all		
	were	absolutely	x	responsible for completing the house
		almost		
		not at all		
	were	absolutely	x	responsible for the use of funding
		almost		
		not at all		
	were	absolutely	x	responsible for obtaining disaster-resistance standards
		almost		
		not at all		
	were	absolutely	x	responsible for obtaining and using information and know-how
		almost		
		not at all		
	were	absolutely	x	responsible for selecting where to invest the resources
		almost		
		not at all		

complete	ok	next		

impacts	project goals	55	debt

before the project (before and/or after the disaster):
n/a

within the project:				
the debt acquired by local organisations or the national government to develop the project. A low debt resulting from the project is considered as a potential positive effect of the project				
the debt resulting from the project	was	an insignificant a reasonable a very high	 x 	burden for local organisations or the national government

complete	ok	next		

impacts	project goals	56	environmental impact

before the project (before and/or after the disaster):

n/a

within the project:

the positive and negative impacts of the project on the environment. This might include negative impacts due to the sprawl of urbanisation, the over exploitation of indigenous materials, and the effects of the disruption of public infrastructure (particularly sewage systems). This indicator denotes the assessment of long-term consequences on the sustainability of the project

the project	not at all	x	had a negative effect in urban sprawl
	almost		
	absolutely		
	not at all		had a negative effect of over exploitation of natural resources
	almost	x	
	absolutely		
	not at all	x	had a negative effect in natural sources of water
	almost		
	absolutely		
	not at all	x	had a negative effect in natural forests
	almost		
	absolutely		
	not at all	x	had a negative effect in public health
	almost		
	absolutely		
	absolutely	x	contributed to urban/rural organisation and consolidation
	almost		
	not at all		
	absolutely	x	reduced the negative effects of the disaster in the environment
	almost		
	not at all		
	absolutely	x	reduced the negative effects of the disaster in public health
	almost		
	not at all		

complete	ok	next		

impacts	project goals	57	recovery of normal activities

before the project (before and/or after the disaster):
n/a

within the project:			
the performance in terms of time for the recovery of normal activities. It includes assessing the time it took for the majority of the community to resume daily activities (going to work, to school, do normally domestic activities, etc.)			
the project	absolutely	x	facilitated the recovery of: people going to work
	almost		
	not at all		
	absolutely	x	facilitated the recovery of: people going to school
	almost		
	not at all		
	absolutely	x	facilitated the recovery of: people doing domestic activities
	almost		
	not at all		
	absolutely	x	facilitated the recovery of people: doing recreational activities
	almost		
	not at all		

complete	ok	next		

impacts	project goals	58	physical resistance to hazards

before the project (before and/or after the disaster):

n/a

within the project:

cumulative performance in terms of the overall resistance to natural hazards. It includes not only the resistance of the original units (as built during the project) but also the resistance of later additions and modifications to the original units. This indicator compiles the general resistance to hazards due to safe location, exposure to danger, awareness and mitigation of possible risks, implementation of better building codes and standards, and in general all the structural and non structural risks of unsafe conditions. It denotes the capacity of the project to guarantee long term safe conditions of housing

original houses	were	absolutely	x	safe (resistance to natural hazards) at the mid-term
		almost		
		not at all		
modified houses (inc. additions)	were	absolutely	x	safe (resistance to natural hazards) at the mid-term
		almost		
		not at all		
infrastructure	was	absolutely	x	safe (resistance to natural hazards) at the mid-term
		almost		
		not at all		
other buildings and facilities	were	absolutely	x	safe (resistance to natural hazards) at the mid-term
		almost		
		not at all		

complete	ok	next		

impacts	project goals	59	transfer of better building practices

before the project (before and/or after the disaster):

n/a

within the project:

the performance in the assimilation of better building practices, particularly in self-help and this including better use of materials, improvements in local technologies, general awareness of risks, respect of building codes and standards, etc. This variable indicates the capacity of the project to reduce the long-term physical vulnerabilities of the community (particularly if a great percentage of regular housing is user-made)

user-made constructions after the project	were	absolutely almost not at all	x 	safe (resistance to natural hazards)
construction technologies	were	absolutely almost not at all	x 	improved in user-made constructions after the disaster
user-made constructions after the project	were	absolutely almost not at all	 x 	vigilant of construction codes and standards
proper maintenance	was	absolutely almost not at all	 x 	conducted to housing structures

complete	ok	next		

impacts	project goals	60	institutional capacity and development

before the project (before and/or after the disaster):

n/a

within the project:

the performance of the project in reinforcing the administrative methods, expertise, know-how, and management tools of local authorities for disaster management. This indicator denotes the capacity of the project to increase the level of development from the local authorities point of view. It includes assessing: (i) the implementation or not of programs of education, training, administrative cooperation and information targeted to local authorities; and (ii) the level of participation of regular administrative units (municipalities, regular public entities, etc.) in the reconstruction project. The creation of temporary public entities with the exclusive mandate of dealing with reconstruction activities - which dissolve once reconstruction is finished - is considered as a potential cause of loss of the know how and expertise gained through the development of the project

education and training programs	were	absolutely		implemented for local authorities and administrative units
		almost		
		not at all	x	
local administrative units		absolutely		participated in the design and management of the project
		almost	x	
		not at all		
temporary entities for reconstruction	were	not at all		dissolved after the project
		almost		
		absolutely	x	
new administrative methods and plans	were	not at all		implemented after the project
		almost	x	
		absolutely		
local administrative units		absolutely		had responsibility of the good development of the project
		almost		
		not at all	x	

complete	ok	next		

impacts	project goals	61	equality of gender and minorities

before the project (before and/or after the disaster):

n/a

within the project:

the performance of the project in selecting the beneficiaries of the project. It highlights possible segregation by gender, race, social status, religious affiliation, etc. It may also denote the selection of beneficiaries according to other variables such as: capacity of acquiring debts, family income, tenure of civil address or registered ID, land or home ownership, legal occupation of land, tenure of titles of legal property, location in safe areas, etc. This indicator denotes the performance of the project in terms of covering and scope

a fair method of selection of beneficiaries	was	absolutely almost not at all	 x 	implemented in the project
women and men	had	absolutely almost not at all	x 	the same rights to obtain products and services in the project
residents from different races	had	absolutely almost not at all	x 	the same rights to obtain products and services in the project
residents from different social classes	had	absolutely almost not at all	x 	the same rights to obtain products and services in the project
residents with different religious affiliation	had	absolutely almost not at all	x 	the same rights to obtain products and services in the project
people without civil ID or not registered	had	absolutely almost not at all	x 	the same rights to obtain products and services in the project
residents of the lowest economic levels	were	absolutely almost not at all	 x 	included as beneficiaries of products and services
people without legal tenure	were	absolutely almost not at all	 x 	included as beneficiaries of products and services
non land owners or home owners	were	absolutely almost not at all	 x 	included as beneficiaries of products and services
people located in unsafe areas	were	absolutely almost not at all	 x 	included as beneficiaries of products and services

complete	ok	next		

impacts	project goals	62	all settlements in safe areas

before the project (before and/or after the disaster):

n/a

within the project:

the contribution of the project to eliminate housing located in dangerous areas. It highlights the permanence of squatting settlements in risk-prone areas and remaining risks due to location. It denotes the capacity of the project to achieve the ultimate goal of eliminating physical vulnerability of housing

housing in the region	was	absolutely		built in safe areas
		almost	x	
		not at all		
the project		absolutely	x	contributed to reduce settlements in risk-prone areas
		almost		
		not at all		
		absolutely	x	contributed to reduce the physical vulnerability of housing
		almost		
		not at all		
a similar disaster	is	absolutely		unlikely to happen to the same population in the same region
		almost	x	
		not at all		

complete	ok	start		

FIPs of CECI's project in Honduras

inputs	multi organisation	1	the capacity to attract funds for the project

before the project (before and/or after the disaster):

n/a

within the project:

capacity to obtain donations and/or financing. It assesses the amount of resources obtained vs. the initial estimation and budget

the capacity to attract funds	absolutely		permitted to collect the funds required according to the initial estimations
	almost		
	not at all	x	
	absolutely		permitted to get on time the funds that were required
	almost		
	not at all	x	
	absolutely		guaranteed a continuous investment of resources
	almost	x	
	not at all		
	absolutely		permitted to target an appropriate level of quality in the outputs offered
	almost		
	not at all	x	
	absolutely		permitted to deal with a complete series of outputs
	almost		
	not at all	x	
	absolutely		permitted the organisation an adequate independence of decision making
	almost	x	
	not at all		

complete	ok	next		

next

inputs	multi organisation	2	level of integration with the community

before the project (before and/or after the disaster):
n/a

within the project:			
directly related with the definition of integration used here. Includes the capacity of the organisation to develop horizontal relations with members of the community, beneficiaries and grass roots organisations in order to accomplish common objectives			
local residents	absolutely	x	had an active participation within the multi-organisation
	almost		
	not at all		
local associations	absolutely	x	had an active participation within the multi-organisation
	almost		
	not at all		
local authorities	absolutely	x	had an active participation within the multi-organisation
	almost		
	not at all		
grass-roots NGOs	absolutely		had an active participation within the multi-organisation
	almost	x	
	not at all		
local contractors	absolutely		had an active participation within the multi-organisation
	almost	x	
	not at all		
the organis. in charge of the project had	completely		established relations in the region before the beginning of the project
	partially		
	not	x	

complete	ok	next		

inputs	multi organisation	3	level of integration between organisations

before the project (before and/or after the disaster):

n/a

within the project:

directly related with the definition of integration used here. Includes the capacity of the organisation to develop horizontal and vertical relations with banks, NGOs, private companies, etc. in order to accomplish and reinforce common objectives

individual objectives of each organis.	were	absolutely		coordinated to achieve a common objective
		almost		
		not at all	x	
the organisation in charge of the project	had	enough		links with other organis. to work together towards a common objective
		almost enough		
		not enough	x	
integration with other organisations		absolutely	x	resulted in appropriate cooperation
		almost		
		not at all		
integration with other organisations		absolutely		facilitated collecting funds and obtaining financing
		almost		
		not at all	x	
the relations between the organisations	were	absolutely		consolidated when needed
		almost	x	
		not at all		

complete	ok	next		

inputs	multi organisation	4	level of differentiation between organisations

before the project (before and/or after the disaster):

n/a

within the project:

based on the assessment of corporate performance as proposed by Lawrence and Lorsh. Includes the assessment of the level of definition of different roles among the organisations of the project team. The performance decreases if activities made by different organisations overlapped incurring in redundancy, too much assistance, or repetition

the differentiation of responsibilities	was	absolutely		defined in a clear manner
		almost		
		not at all	x	
the differentiation of responsibilities		never		overlapped incurring in repetition and redundancy
		sometimes	x	
		always		
the differentiation of responsibilities		absolutely		took advantage of the strengths and weaknesses of each organisation
		almost		
		not at all	x	
the differentiation of responsibilities		absolutely		contributed to attain a common objective
		almost		
		not at all	x	
the differentiation of responsibilities	was	absolutely		set up when needed
		almost		
		not at all	x	

complete	ok	next		

inputs	multi organisation	5	project's administrative costs

before the project (before and/or after the disaster):

n/a

within the project:

the level of optimization of economic resources for the benefit of beneficiaries. Assessed as a the percentage of the project's budget. Lower administrative costs = better *performance*

project's administrative costs	were	absolutely		reduced through the optimisation of local resources
		almost		
		not at all	x	
	were	absolutely		reduced by minimising the costs of expatriate officers
		almost	x	
		not at all		
	were	absolutely		justified by having reduced overall costs for the project
		almost	x	
		not at all		
		absolutely		favored the maximum use of money for the benefit of beneficiaries
		almost		
		not at all	x	

complete	ok	next		

inputs	multi organisation	6	the capacity of the system to adapt to the environm.

before the project (before and/or after the disaster):
n/a

within the project:				
the capacity to react to the risks and opportunities of the environment at the social, economic and political levels. Includes an assessment of the influence of the environment in the objectives targeted by the multi-organisation				
the objectives of the project	were	not at all		affected by negative unexpected changes of the environment
		somehow		
		greatly	x	
the risks inherent to the environment	were	absolutely		assessed by the multi-organisation during the project
		almost		
		not at all	x	
the organis. responsible of the project		absolutely		anticipated a plan to minimise (share) financial risks
		almost		
		not at all	x	
the organis. responsible of the project		absolutely		took advantage of unexpected opportunities in the environment
		almost	x	
		not at all		
when required, changes in the project	were	absolutely		implemented
		almost	x	
		not at all		
the organi. responsible of the project	was	absolutely		prepared to work in a hostile environment
		almost		
		not at all	x	

complete	ok	next		

inputs	management tools	7	a census of local residents

before the project (before and/or after the disaster):

n/a

within the project:

dams, barriers and retaining walls built to protect housing from natural hazards (landslides, floods, fires, etc). Safe conditions and reduction of risks for the population are assessed in this indicator

a census of local residents	was		x	not conducted (end)
				conducted by a different program/organisation (end)
				conducted as part of the project
	was	absolutely		inclusive of diversity and everybody in the community
		almost		
		not at all		
	was	absolutely		conducted and used on time
		almost		
		not at all		
	was	absolutely		used to adapt the project to the real needs of the population
		almost		
		not at all		
	was	absolutely		the appropriate strategy (management tool) to use
		almost		
		not at all		

incomplete	ok	next		

inputs	management tools	8	previous studies (typologies, techniques, etc)

before the project (before and/or after the disaster):
n/a

within the project:				
pre-project technical studies (pre- or post-disaster) to collect information about local living conditions, architectural typologies, construction techniques, etc.				
previous studies (typologies, techniques, etc)	were		x	not conducted (end)
				conducted by a different program/organisation (end)
				conducted as part of the project
	were	absolutely		useful to discover new information about local characteristics
		almost		
		not at all		
	were	absolutely		conducted and used on time
		almost		
		not at all		
	were	absolutely		used to adapt the project to local characteristics
		almost		
		not at all		
	were	absolutely		properly reported or published for future reference
		almost		
		not at all		
	were	absolutely		the appropriate strategy (management tool) to use
		almost		
		not at all		

incomplete	ok	next		

inputs	management tools	9	surveys of people's needs

before the project (before and/or after the disaster):

n/a

within the project:

post-disaster assessment of damages and real needs (through questionnaires, visits, meetings with the community, etc.)

surveys of people's needs	were			not conducted (end)
				conducted by a different program/organisation (end)
			x	conducted as part of the project
	were	absolutely		useful to reveal new information about residents expectations
		almost		
		not at all	x	
	were	absolutely		conducted and used on time
		almost	x	
		not at all		
	were	absolutely		used to adapt the project to real needs
		almost		
		not at all	x	
	were	absolutely		properly reported or published for future reference
		almost		
		not at all	x	
	were	absolutely		the appropriate strategy (management tool) to use
		almost		
		not at all	x	

complete	ok	next		

inputs	management tools	10	consultation with the community

before the project (before and/or after the disaster):

n/a

within the project:

assessment of the users' opinions and suggestions regarding living conditions, expectations, and requirements

consultation with the community	was			not conducted (end)
				conducted by a different program/organisation (end)
			x	conducted as part of the project
		absolutely		contributed in the beginning to set up the priorities of the project
		almost		
		not at all	x	
		absolutely		permitted to make changes and adapt the project during the process
		almost		
		not at all	x	
		absolutely		enhanced diversity and multiplicity
		almost	x	
		not at all		
		absolutely		permitted a fair representation of all the residents
		almost	x	
		not at all		
	was			intended to design the project
				intended to adapt the existing project
			x	intended to present the project to residents

complete	ok	next		

inputs	local resources	11	the capacity of residents to work in construction

before the project (before and/or after the disaster):

n/a

within the project:

indicates availability of time, knowledge and interest to work in construction. It assesses the users' availability of time to work in construction; users' skills and know how in building practices; and users' interest to invest their time and expertise in construction

beneficiaries of the project	had	sufficient		knowledge about construction practices
		relative		
		insufficient	x	
	had	sufficient		availability of time to work in construction
		relative	x	
		insufficient		
	had	sufficient		interest to work in construction activities
		relative	x	
		insufficient		
	had	sufficient	x	guidance to work in construction activities
		relative		
		insufficient		
	had	sufficient		physical conditions to work in construction activities
		relative	x	
		insufficient		

complete	ok	next		

inputs	local resources	12	materials and equipment available

before the project (before and/or after the disaster):

n/a

within the project:

the capacity to use indigenous materials (wood, sand, earth, palm leaves, bamboo, clay, etc.) for the production of construction components and the availability of tools and equipment for construction

local indigenous materials	were	absolutely		available in the region
		almost	x	
		not at all		
		absolutely	x	corresponded to the skills of the affected population
		almost		
		not at all		
	were	absolutely	x	safe for the environment (preventing degradation of natural resources)
		almost		
		not at all		
tools and equipment	were	absolutely		available in the region
		almost	x	
		not at all		
		absolutely	x	corresponded to the skills of the affected population
		almost		
		not at all		

complete	ok	next		

outputs	financial / funding	13	tax incentives for companies / individuals

before the project (before and/or after the disaster):

n/a

within the project:

the implementation of tax incentives to attract investment and economic recovery after the disaster. Tax incentives are targeted to promote the creation of employement opportunties, new businesses and the development of local industries. Equally, tax incentives to individuals during a certain period of time ease the financial burden of recovery of the affecetd families

tax incentives	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	financial / funding	14	loans for housing

before the project (before and/or after the disaster):

pre-disaster capacity of local residents to have access to banking loans and mortgages for housing

loans for housing	were	widely		accessible to residents before the project
		not widely	x	
	were	absolutely		appropriate for the needs of the population
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

the implementation of loans for repairs, self-help initiatives or buying a new house. This indicator denotes the confidence of the financial system in the affected community and the capacity of the users to enter into the regular banking system

loans for housing	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	financial / funding	15	subsidies for housing

before the project (before and/or after the disaster):

pre-disaster capacity of local residents to have access to governmental subsidies for housing

subsidies for housing	were	widely		accessible to residents before the project
		not widely	x	
	were	absolutely		appropriate for the needs of the population
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

non-reimbursable financial aid for repairs, purchase of a new house or self-help

subsidies for housing	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	financial / funding	16	loans for infrastructure or others

before the project (before and/or after the disaster):

pre-disaster capacity of local residents to have access to regular loans for individual or familial investment

loans for infrastructure or others	were	widely		accessible to residents before the project
		not widely	x	
	were	absolutely		appropriate for the needs of the population
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

loans for infrastructure repair, for buildings related with sources of income (for individual shops, small industries, etc), or other initiatives for recovery. This indicator denotes the confidence of the financial system in the affected community and the capacity of the users to enter into the regular banking system

loans for infrastructure or others	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	financial / funding	17	subsidies for infrastructure or others

before the project (before and/or after the disaster):

pre-disaster capacity of local residents to have access to governmental subsidies for individual or familial investment

subsidies for infrastructure or others	were	widely		accessible to residents before the project
		not widely	x	
	were	absolutely		appropriate for the needs of the population
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

non-reimbursable financial aid for infrastructure repair, for buildings related with sources of income (for individual shops, small industries, etc), or for other initiatives for recovery

subsidies for infrastructure or others	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	infrastructure	18	dams, barriers, retaining walls

before the project (before and/or after the disaster):

assesses if dams, barriers and retaining walls existed to protect housing from natural hazards (landslides, floods, fires, etc) and if this infrastructure guaranteed security and did not represent risks for the population

dams, barriers, retaining walls	were	absolutely		safe to protect residents before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

dams, barriers and retaining walls built to protect housing from natural hazards (landslides, floods, fires, etc). Safe conditions and reduction of risks for the population are assessed in this indicator

dams, barriers, retaining walls	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe to protect residents
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	infrastructure	19	roads

before the project (before and/or after the disaster):

assesses if roads (urban or rural) were appropriate and enough to cover the needs of housing in the community and the risks that they might represent for the population. It also assesses the damages in roads caused by the disaster

roads	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely		safe in case of emergency and danger
		not completely	x	
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of roads. The indicator applies at two levels: public infrastructure (for the benefit of the community) and individual infrastructure (in private property for the benefit of its owners). Individual infrastructure includes the activities and construction required for the connection to public services. These indicators illustrate the sustainability of the project and the consideration of long term effects in public health and safety

roads	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe in case of emergency and danger
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	infrastructure	20	water supply

before the project (before and/or after the disaster):

assesses if water supply was appropriate and enough to cover the needs of housing in the community and the risks that it might represent for the population. It also assesses the damages caused by the disaster

water supply infrastructure	was	absolutely		appropriate for the context before the project
		not completely	x	
	was	absolutely		enough to cover the needs of the population
		not completely	x	
	was	absolutely		safe for public health
		not completely	x	
	was	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of water supply infrastructure. The indicator applies at two levels: public infrastructure (for the benefit of the community) and individual infrastructure (in private property for the benefit of its owners). Individual infrastructure includes the activities and construction required for the connection to public services. These indicators illustrate the sustainability of the project and the consideration of long term effects in public health and safety

water supply infrastructure	was			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all	x	
	was	absolutely		on time when needed
		almost		
		not at all	x	
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all	x	
	was	absolutely	x	offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost	x	
		not at all		
	was	absolutely		safe for public health
		almost	x	
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all	x	

complete	ok	next		

outputs	infrastructure	21	electricity

before the project (before and/or after the disaster):

assesses if electricicty supply was appropriate and enough to cover the needs of housing in the community and the risks that it might represent for the population. It also assesses the damages caused by the disaster

electricity infrastructure	was	absolutely		appropriate for the context before the project
		not completely	x	
	was	absolutely		enough to cover the needs of the population
		not completely	x	
	was	absolutely		safe considering local codes
		not completely	x	
	was	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of infrastructure for electricity supply. The indicator applies at two levels: public infrastructure (for the benefit of the community) and individual infrastructure (in private property for the benefit of its owners). Individual infrastructure includes the activities and construction required for the connection to public services. These indicators illustrate the sustainability of the project and the consideration of long term effects in public health and safety

electricity infrastructure	was			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all	x	
	was	absolutely		on time when needed
		almost		
		not at all	x	
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all	x	
	was	absolutely	x	offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost	x	
		not at all		
	was	absolutely		safe considering local codes
		almost		
		not at all	x	
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all	x	

complete	ok	next		

outputs	infrastructure	22	sewage

before the project (before and/or after the disaster):

assesses if the sewage system was appropriate and enough to cover the needs of housing in the community and the risks that it might represent for the population. It also assesses the damages caused by the disaster

sewage infrastructure	was	absolutely		appropriate for the context before the project
		not completely	x	
	was	absolutely		enough to cover the needs of the population
		not completely	x	
	was	absolutely		safe for public health
		not completely	x	
	was	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of sewage infrastructure. The indicator applies at two levels: public infrastructure (for the benefit of the community) and individual infrastructure (in private property for the benefit of its owners). Individual infrastructure includes the activities and construction required for the connection to public services. These indicators illustrate the sustainability of the project and the consideration of long term effects in public health and safety

sewage infrastructure	was			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all	x	
	was	absolutely		on time when needed
		almost		
		not at all	x	
	was	absolutely		appropriate for the needs of the population
		almost	x	
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all	x	
	was	absolutely		the appropriate strategy to be used
		almost	x	
		not at all		
	was	absolutely		safe for public health
		almost		
		not at all	x	
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all	x	

complete	ok	next		

outputs	infrastructure	23	telephone

before the project (before and/or after the disaster):

assesses if the infrastructure for telephone system was appropriate and enough to cover the needs of housing in the community. It also assesses the damages caused by the disaster

infrastructure for telephone	was	absolutely		appropriate for the context before the project
		not completely	x	
	was	absolutely		enough to cover the needs of the population
		not completely	x	
	was	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of infrastructure for telephone systems. The indicator applies at two levels: public infrastructure (for the benefit of the community) and individual infrastructure (in private property for the benefit of its owners). Individual infrastructure includes the activities and construction required for the connection to public services. These indicators illustrate the sustainability of the project and the consideration of long term effects in public health and safety

infrastructure for telephone	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	community services	24	schools

before the project (before and/or after the disaster):

pre-project conditions of facilities

schools	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely		safe (resistance to hazards)
		not completely	x	
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of facilities

schools	were			not offered at all to the affected population (end)
			x	offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	community services	25	health centers

before the project (before and/or after the disaster):

pre-project conditions of facilities

health centers	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely		safe (resistance to hazards)
		not completely	x	
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of facilities

health centers	were			not offered at all to the affected population (end)
			x	offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	community services	26	community centers / religious bldg.

before the project (before and/or after the disaster):

pre-project conditions of facilities

community centers / religious bldg.	were	absolutely	x	appropriate for the context before the project
		not completely		
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely		safe (resistance to hazards)
		not completely	x	
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of facilities

community centers / religious bldg.	were			not offered at all to the affected population (end)
			x	offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	community services	27	police / fire stations

before the project (before and/or after the disaster):

pre-project conditions of facilities

police / fire stations	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	
	were	absolutely	x	safe (resistance to hazards)
		not completely		
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

the performance in the construction of facilities

police / fire stations	were			not offered at all to the affected population (end)
			x	offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	housing	28	new lots

before the project (before and/or after the disaster):

the pre-disaster level of access to land property; and/or pre- and post-disaster risks associated with the tenure of land, particularly due to location in zones of risk

lots	were	absolutely		appropriate for the context before the project
		not completely	x	
land tenure	was	absolutely		enough to cover the needs of the population
		not completely	x	
land	was	absolutely		safe (resistance to hazards)
		not completely	x	
land tenure	was	widely		accessible to residents
		not widely	x	

within the project:

initiatives targeted to increase the residents' capacity to acquire safe lots for housing; including loans or subsidies given for purchasing land or the direct donation of lots

new lots	were			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely		achieved as planned
		almost	x	
		not at all		
	were	absolutely		on time when needed
		almost	x	
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all	x	
	were	absolutely	x	offered to the right people who needed them
		almost		
		not at all		
	were	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely	x	safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely	x	enough to cover the needs of the population
		almost		
		not at all		

complete	ok	next		

outputs	housing	29	emergency shelters

before the project (before and/or after the disaster):

pre-disaster arrangements and planning made by the organisations to adequately respond to the emergency. It represents the access of the community to contingency plans by the civil defense, fire departments, Red Cross, etc.

emergency shelters	were	absolutely		planned, before the disaster, through contingency plans
		not completely	x	
emergency organisations	were	absolutely		prepared for a housing emergency
		not completely	x	
authorities	were	absolutely		prepared for a housing emergency
		not completely	x	
info about contingency plans	was	widely		accessible to residents before the disaster
		not widely	x	

within the project:

implementation of an emergency sheltering plan; including provision of tents, plastics or other materials to build shelters for the first days after the disaster

emergency shelters	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe to short-term protection of residents
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	housing	30	temporary housing

before the project (before and/or after the disaster):

pre-disaster arrangements and planning made by authorities and local NGOs to adequately respond to the requireness for transitory housing

temporary housing	was	absolutely		planned, before the disaster in urban plans
		not completely	x	
emergency organisations	were	absolutely		prepared for building transitory housing
		not completely	x	
authorities	were	absolutely		prepared for building transitory housing
		not completely	x	
info about temporary housing plans	was	widely		accessible to residents before the disaster
		not widely	x	

within the project:

this might include the implementation of: (i) temporary units (i.e. pre-fab and winterised units); (ii) adapted temporary housing (public facilities or rented apartments); or (iii) self-provided temporary housing (homes of families / friends, user-built shelters, or second homes)

temporary housing	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe for mid-term protection of residents
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	housing	31	new houses

before the project (before and/or after the disaster):

the pre-disaster level of access to housing (or the contrary: the level of housing shortage) and post-disaster homelessness caused by the disaster

houses	were	absolutely		accessible to all residents before the disaster
		not completely	x	
new houses	were	absolutely		unnecessary after the disaster
		not completely	x	

within the project:

initiatives targeted to facilitate the acquisition of new permanent housing, including (if necessary) relocation of residents living in dangerous conditions. Permanent new housing can be obtained: (i) through the provision of finished units; (ii) by facilitating and organising self-help construction; or (iii) by facilitating and organising the purchase of new housing existing in the market

new houses	were			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	were	absolutely		achieved as planned
		almost	x	
		not at all		
	were	absolutely		on time when needed
		almost	x	
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost	x	
		not at all		
	were	absolutely	x	offered to the right people who needed them
		almost		
		not at all		
	were	absolutely	x	the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely	x	safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely	x	enough to cover the needs of the population
		almost		
		not at all		

complete	ok	next		

outputs	housing	32	reconstructed houses

before the project (before and/or after the disaster):

the pre- and post-disaster risks of collapse of housing structures due to one or some of the following reasons: (i) lack of maintenance; (ii) use of inadequate materials; (iii) use of inadequate technologies; (iv) unsafe additions and structural modifications to housing; (v) insufficient construction codes and standards

houses	were	absolutely		functional after the disaster
		not completely	x	
	were	absolutely		appropriate for the needs of the population
		not completely	x	
	were	absolutely		safe after the disaster
		not completely	x	

within the project:

the reconstruction of affected structures, including minor repairs and major reconstruction

the reconstruction of affected houses	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		safe for long-term protection of residents
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	industry /employm.	33	bldgs/infras. for industry & income generation

before the project (before and/or after the disaster):

the pre-disaster level of access to sources of income; and/or pre- and post-disaster risks associated with the buildings and infrastructure related with income generation, particularly the risks of collapse, destruction of infrastructure, destruction of plantations, machinery or equipment, etc.

bldgs/infras. for industry & income generation	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	widely		accessible to residents
		not widely	x	
	were	absolutely		safe (resistance to hazards)
		not completely	x	
	were	absolutely		functional after the disaster
		not completely	x	

within the project:

the construction of buildings and infrastructure associated with the generation of income and employment at the scale of single families or small clusters (excluding the reconstruction of large industries/companies). It might include the reconstruction of shops, small industries, small scale infrastructure for production, processing or agriculture activities, etc., assessing the consideration of long-term needs for economic recovery, the capacity of the community to become economically independent, and in general, the sustainability of the project. Only physical construction is considered, not including functioning and management of facilities

bldgs/infras. for industry & income generation	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		safe as offered (resist. to hazards of the original product)
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	industry /employm.	34	unemployment subsidies

before the project (before and/or after the disaster):

pre-disaster access to regular governmental unemployment subsidies (equivalent to welfare)

unemployment subsidies	were	widely		accessible to residents
		not widely	x	
	were	absolutely		appropriate for the context before the project
		not completely	x	
	were	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

initiatives targeted to the implementation of subsidies for people that have lost their jobs or sources of income during the disaster. This indicator denotes the consideration of short-term needs for economic recovery

unemployment subsidies	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	others	35	rescue

before the project (before and/or after the disaster):

the pre-disaster capacity of local institutions (the civil defense, the police, the army, the local NGOs, the local Red Cross, etc.) to speedily and effectively react to the destruction

local organisations	were	absolutely		on time to conduct emergency and rescue
		not completely	x	
		absolutely		effectively conducted contingency and rescue
		not completely	x	
external aid	was	absolutely		unnecessary for rescue activities
		not completely	x	

within the project:

the implementation of rescue activities

rescue activities	were		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	were	absolutely		achieved as planned
		almost		
		not at all		
	were	absolutely		on time when needed
		almost		
		not at all		
	were	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	were	absolutely		offered to the right people who needed them
		almost		
		not at all		
	were	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	were	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	others	36	psychological aid

before the project (before and/or after the disaster):

pre-disaster access to psychological aid. Even though this is a difficult aspect to identify in urban contexts it is easier to identify as being absent in most of rural contexts

psychological aid	was	widely		accessible to residents
		not widely	x	
	was	absolutely		appropriate for the needs of the population
		not completely	x	
	was	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

initiatives targeted to provide psychological aid to the affected residents. This might include individual or group therapies, giving advice and information in newspapers or magazines

psychological aid	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	others	37	food

before the project (before and/or after the disaster):

pre-disaster access to food, it highlights pre-disaster and post-disaster levels of malnutrition

food	was	absolutely		accessible to residents
		not completely	x	
	was	absolutely	x	appropriate for the needs of the population
		not completely		
	was	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

initiatives targeted to provide food to the affected residents in the first days after the disaster.

food	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	others	38	medical aid

before the project (before and/or after the disaster):

pre- and post-disaster level of access to regular medical care. This vulnerability might consider the availability of health centers in the region and a qualitative assessment of the capacity of residents to gain access to health insurances

medical aid	was	widely		accessible to residents
		not widely	x	
	was	absolutely	x	appropriate for the needs of the population
		not completely		
	was	absolutely		enough to cover the needs of the population
		not completely	x	

within the project:

initiatives targeted to the provision of medical assistance in the first days after the disaster

medical aid	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	others	39	temporary infrastructure

before the project (before and/or after the disaster):

the capacity of institutions to react to the destruction of public services and infrastructure, particularly the reaction of governmental organizations in charge of public services and roads

temporary infrastructure	was	absolutely		planned in contingency plans
		not completely	x	
local organisations	were	absolutely		prepared to react to the destruction of infrastructure
		not completely	x	
external aid	was	absolutely		unnecessary after the disaster
		not completely	x	

within the project:

initiatives targeted to the implementation of temporary electrical and telephone systems, temporary water supply, and temporary bridges, dams or any other infrastructure required to guarantee the safety and recovery of residents. This indicator assesses the capacity of residents to quickly resume daily activities

temporary infrastructure	was		x	not offered at all to the affected population (end)
				offered by a different program/organisation (end)
				offered as part of the project
	was	absolutely		achieved as planned
		almost		
		not at all		
	was	absolutely		on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost		
		not at all		
	was	absolutely		offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost		
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all		

incomplete	ok	next		

outputs	others	40	education and technical assistance

before the project (before and/or after the disaster):

pre-disaster access to technical education and knowledge. It might include assessing the average access to schooling and informal education in the region

schooling (up to secondary)	was	widely		accessible to residents
		not widely	x	
residents	had	complete		knowledge about construction -related subjects
		insufficient	x	
technical courses and informal education	were	widely		accessible to residents
		not widely	x	

within the project:

the implementation of plans for education and technical assistance. It might include education in disaster prevention, education in better construction practices, formation on leadership, equity, human rights, protection of the environment, etc. and technical assistance for developing better construction practices or for the assembly of construction components

education and technical assistance	was			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	was	absolutely	x	achieved as planned
		almost		
		not at all		
	was	absolutely	x	on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost	x	
		not at all		
	was	absolutely	x	offered to the right people who needed it
		almost		
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost	x	
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost	x	
		not at all		

complete	ok	next		

outputs	others	41	information

before the project (before and/or after the disaster):

pre-disaster access to information related with risks, awareness, contingency and coping activities. It might include assessing the average access to the media (news papers, internet, TV and radio), the existence of campaigns of information and the access to local and external publications

information concerning risks, awareness, etc.	was	widely		accessible to residents
		not widely	x	
campaigns of information to the public	were	widely		used in the region
		not widely	x	
residents	had	widely		access to the media in general
		not widely	x	

within the project:

the implementation of plans for dissemination of information and knowledge regarding the disaster or the reconstruction activities. It might include publications, meetings with the community and information through the media to inform about the causes and effects of the disaster, the projects in action, how to access to the benefits of the project, how to find a job, etc.

information	was			not offered at all to the affected population (end)
				offered by a different program/organisation (end)
			x	offered as part of the project
	was	absolutely	x	achieved as planned
		almost		
		not at all		
	was	absolutely	x	on time when needed
		almost		
		not at all		
	was	absolutely		appropriate for the needs of the population
		almost	x	
		not at all		
	was	absolutely		offered to the right people who needed it
		almost	x	
		not at all		
	was	absolutely		the appropriate strategy to be used
		almost	x	
		not at all		
	was	absolutely		enough to cover the needs of the population
		almost		
		not at all	x	

complete	ok	next		

results	transfer	42	loans given and subsidies allocated

before the project (before and/or after the disaster):
n/a

within the project:				
the performance in the transfer of financial solutions and funding, being useful to identify if the money finally reached the beneficiaries				
loans and subsidies offered	were	absolutely		allocated as planned
		almost		
		not at all	x	
	were	absolutely		used at an appropriate time (as assumed)
		almost		
		not at all	x	
	were	absolutely		used in the appropriate way (as assumed)
		almost		
		not at all	x	
	were	absolutely		used by the people that needed them (as assumed)
		almost		
		not at all	x	

complete	ok	next		

results	transfer	43	direct and indirect jobs created

before the project (before and/or after the disaster):
n/a

within the project:				
the consequences in the creation of employment opportunities of having developed the different outputs. It denotes the capacity of the project to facilitate the recovery of the economy and the achievement of the economic independence of the beneficiaries				
new direct and indirect jobs	were	absolutely		enough to facilitate the recovery of the local economy
		almost	x	
		not at all		
		absolutely		facilitated the economic independence of beneficiaries
		almost	x	
		not at all		
	were	absolutely		created at the appropriate time
		almost	x	
		not at all		
		absolutely		represented appropriate working conditions for residents
		almost		
		not at all	x	

complete	ok	next		

results	transfer	44	houses occupied

before the project (before and/or after the disaster):
n/a

within the project:				
the post-project rate of occupation of dwellings. It is particularly useful to identify the acceptability of the houses provided by the multi-organisation				
the houses provided	were	absolutely		
		almost	x	occupied by residents
		not at all		
	were	absolutely		
		almost	x	occupied at the appropriate time (as assumed)
		not at all		
	were	absolutely		
		almost	x	used in the appropriate way (as assumed)
		not at all		
	were	absolutely		
		almost	x	used by the people that needed them (as assumed)
		not at all		

complete	ok	next		

results	transfer	45	insurance policies taken

before the project (before and/or after the disaster):
n/a

within the project:				
insurance policies are not a common output of reconstruction projects in the context of the selected case studies. However, it is considered here as a consequence of improving the awareness and knowledge of residents and local organisations. Transferring the risks of destruction to insurance companies is considered here as a positive consequence of educating and informing organisations and individuals about the risks of future disasters				
taking insurance policies for housing	was	very much		incremented after the disaster
		slightly		
		not at all	x	
the risks of disasters	was	absolutely		reduced by the government by sharing it with insurance comp.
		almost		
		not at all	x	

complete	ok	next		

results	transfer	46	emergency protocols implemented

before the project (before and/or after the disaster):

n/a

within the project:

emergency protocols are not considered as a common output of reconstruction projects in the context of the selected case studies. However, it is considered here as a consequence of improving the awareness and knowledge of residents and local organisations. Implementing emergency protocols (particularly in urban contexts) is considered here as a positive consequence of educating and informing organisations and individuals about the risks of future disasters

emergency protocols	were	absolutely almost not at all	 x 	implemented in the region among residential areas
contingency plans and emer. protocols	were	absolutely almost not at all	 x 	included in the agenda of local authorities and organisations

complete	ok	next		

results	transfer	47	**increment of land ownership**

before the project (before and/or after the disaster):
n/a

within the project:			
This is a context-sensitive indicator. It is consider in this context as a positive indicator of results as it denotes the capacity of the project to secure safe land for residents at the long run. Increment of land ownership can be due to the provision of new lots, due to the success of loan or subsidies programs or due to the successful legalisation of illegally occupied land			
land ownership	absolutely almost not at all	x 	increased in the region after the project

complete	ok	next		

results	transfer	48	increment of home ownership

before the project (before and/or after the disaster):
n/a

within the project:			
This is a context-sensitive indicator. It is consider in this context as a positive indicator of results. It can be due to construction of new houses, by acquisition of existing housing stock, or by upgrading of squatter settlements and shacks. This indicator denotes the capacity of the project to guarantee secure safe sheltering in the long term			
home ownership	absolutely almost not at all	x	increased in the region after the project

complete	ok	next		

results	community particip.	49	design

before the project (before and/or after the disaster):
n/a

within the project:				
Assesses the capacity of residents to actively participate in the design of their own dwelling				
residents	did	significantly		decide the distribution of spaces of their own dwelling
		partially		
		not	x	
	did	significantly		decide the location and orientation of their own dwelling
		partially		
		not	x	
	did	significantly		select the finishes of their own dwelling
		partially		
		not	x	
	did	significantly		decide the size and conditions of the spaces their dwellings
		partially		
		not	x	
	did	significantly		select the technology of the structure and main components
		partially		
		not	x	
	did	significantly		select the construction method to be used
		partially		
		not	x	

complete	ok	next		

results	community particip.	50	management

before the project (before and/or after the disaster):
n/a

within the project:				
Assesses the capacity of residents to actively participate in the management of their own dwelling				
residents		absolutely		
		almost		could choose whether using self-help or hiring labor force
		not at all	x	
		significantly		
	did	partially		manage the economic resources
		not	x	
		significantly		
	did	partially		manage the contracts of suppliers
		not	x	
		significantly		
	did	partially		determine the schedule and planning of activities
		not	x	
		significantly		
	did	partially		communicate directly with other stakeholders
		not	x	
		significantly		
	did	partially		organise people and resources in the construction field
		not	x	

complete	ok	next		

results	community particip.	51	financing of the project

before the project (before and/or after the disaster):
n/a

within the project:				
Assesses the capacity of residents to actively participate in the financing of their own dwelling				
residents	did	absolutely		select the financing system for the project
		almost		
		not at all	x	
	did	absolutely		participate in collecting funds
		almost		
		not at all	x	
	did	absolutely		know the costs of construction and materials
		almost		
		not at all	x	
	did	absolutely		have the option of incurring in expenses directly
		almost		
		not at all	x	
	did	absolutely		have the option to participate with own resources
		almost		
		not at all	x	
	did	absolutely		participate in financing collectively (or as a cooperative)
		almost		
		not at all	x	

complete	ok	next		

results	community particip.	52	production of components

before the project (before and/or after the disaster):

n/a

within the project:

Assesses the capacity of residents to actively participate in the production of components for their own dwelling

residents	did	absolutely	x	work in the production of components
		almost		
		not at all		
	did	absolutely	x	learn the technique of production of components
		almost		
		not at all		
	did	absolutely	x	operate the machines for production of components
		almost		
		not at all		
the production of components	did	absolutely	x	optimise the skills and knowledge of residents
		almost		
		not at all		

complete	ok	next		

results	community particip.	53	construction

before the project (before and/or after the disaster):
n/a

within the project:				
Assesses the capacity of residents to actively participate in construction activities for their own dwelling				
residents	did	absolutely	x	work in assembly of construction components
		almost		
		not at all		
	did	absolutely	x	learn the method of construction
		almost		
		not at all		
	did	absolutely	x	get remunerated (money, food or property) for labor force
		almost		
		not at all		
members of the family	did	absolutely	x	have the option to work in the construction field
		almost		
		not at all		

complete	ok	next		

results	community particip.	54	individual responsibility of decision making

before the project (before and/or after the disaster):

n/a

within the project:

Assesses the level of responsibility of decision making

residents	were	absolutely		responsible for registering to the project (or program)
		almost		
		not at all	x	
	were	absolutely		responsible for applying for the services and products offered
		almost		
		not at all	x	
	were	absolutely	x	responsible for completing the house
		almost		
		not at all		
	were	absolutely		responsible for the use of funding
		almost		
		not at all	x	
	were	absolutely		responsible for obtaining disaster-resistance standards
		almost	x	
		not at all		
	were	absolutely		responsible for obtaining and using information and know-how
		almost	x	
		not at all		
	were	absolutely		responsible for selecting where to invest the resources
		almost		
		not at all	x	

complete	ok	next		

impacts	project goals	55	debt

before the project (before and/or after the disaster):
n/a

within the project:				
the debt acquired by local organisations or the national government to develop the project. A low debt resulting from the project is considered as a potential positive effect of the project				
the debt resulting from the project	was	an insignificant a reasonable a very high	x 	burden for local organisations or the national government

complete	ok	next		

impacts	project goals	56	environmental impact

before the project (before and/or after the disaster):

n/a

within the project:

the positive and negative impacts of the project on the environment. This might include negative impacts due to the sprawl of urbanisation, the over exploitation of indigenous materials, and the effects of the disruption of public infrastructure (particularly sewage systems). This indicator denotes the assessment of long-term consequences on the sustainability of the project

the project	not at all		had a negative effect in urban sprawl
	almost		
	absolutely	x	
	not at all		had a negative effect of over exploitation of natural resources
	almost	x	
	absolutely		
	not at all	x	had a negative effect in natural sources of water
	almost		
	absolutely		
	not at all	x	had a negative effect in natural forests
	almost		
	absolutely		
	not at all		had a negative effect in public health
	almost	x	
	absolutely		
	absolutely		contributed to urban/rural organisation and consolidation
	almost		
	not at all	x	
	absolutely		reduced the negative effects of the disaster in the environment
	almost		
	not at all	x	
	absolutely		reduced the negative effects of the disaster in public health
	almost	x	
	not at all		

complete	ok	next		

impacts	project goals	57	recovery of normal activities

before the project (before and/or after the disaster):
n/a

within the project:			
the performance in terms of time for the recovery of normal activities. It includes assessing the time it took for the majority of the community to resume daily activities (going to work, to school, do normally domestic activities, etc.)			
the project	absolutely almost not at all	 x 	facilitated the recovery of: people going to work
	absolutely almost not at all	 x 	facilitated the recovery of: people going to school
	absolutely almost not at all	 x 	facilitated the recovery of: people doing domestic activities
	absolutely almost not at all	 x 	facilitated the recovery of people: doing recreational activities

complete	ok	next		

impacts	project goals	58	physical resistance to hazards

before the project (before and/or after the disaster):

n/a

within the project:

cumulative performance in terms of the overall resistance to natural hazards. It includes not only the resistance of the original units (as built during the project) but also the resistance of later additions and modifications to the original units. This indicator compiles the general resistance to hazards due to safe location, exposure to danger, awareness and mitigation of possible risks, implementation of better building codes and standards, and in general all the structural and non structural risks of unsafe conditions. It denotes the capacity of the project to guarantee long term safe conditions of housing

original houses	were	absolutely almost not at all	x	safe (resistance to natural hazards) at the mid-term
modified houses (inc. additions)	were	absolutely almost not at all	x	safe (resistance to natural hazards) at the mid-term
infrastructure	was	absolutely almost not at all	x	safe (resistance to natural hazards) at the mid-term
other buildings and facilities	were	absolutely almost not at all	x	safe (resistance to natural hazards) at the mid-term

complete	ok	next		

impacts	project goals	59	transfer of better building practices

before the project (before and/or after the disaster):

n/a

within the project:

the performance in the assimilation of better building practices, particularly in self-help and this including better use of materials, improvements in local technologies, general awareness of risks, respect of building codes and standards, etc. This variable indicates the capacity of the project to reduce the long-term physical vulnerabilities of the community (particularly if a great percentage of regular housing is user-made)

user-made constructions after the project	were	absolutely		safe (resistance to natural hazards)
		almost		
		not at all	x	
construction technologies	were	absolutely		improved in user-made constructions after the disaster
		almost	x	
		not at all		
user-made constructions after the project	were	absolutely		vigilant of construction codes and standards
		almost		
		not at all	x	
proper maintenance	was	absolutely		conducted to housing structures
		almost	x	
		not at all		

complete	ok	next		

impacts	project goals	60	institutional capacity and development

before the project (before and/or after the disaster):

n/a

within the project:

the performance of the project in reinforcing the administrative methods, expertise, know-how, and management tools of local authorities for disaster management. This indicator denotes the capacity of the project to increase the level of development from the local authorities point of view. It includes assessing: (i) the implementation or not of programs of education, training, administrative cooperation and information targeted to local authorities; and (ii) the level of participation of regular administrative units (municipalities, regular public entities, etc.) in the reconstruction project. The creation of temporary public entities with the exclusive mandate of dealing with reconstruction activities - which dissolve once reconstruction is finished - is considered as a potential cause of loss of the know how and expertise gained through the development of the project

education and training programs	were	absolutely	x	implemented for local authorities and administrative units
		almost		
		not at all		
local administrative units		absolutely	x	participated in the design and management of the project
		almost		
		not at all		
temporary entities for reconstruction	were	not at all	x	dissolved after the project
		almost		
		absolutely		
new administrative methods and plans	were	not at all		implemented after the project
		almost	x	
		absolutely		
local administrative units		absolutely		had responsibility of the good development of the project
		almost	x	
		not at all		

complete	ok	next		

impacts	project goals	61	equality of gender and minorities

before the project (before and/or after the disaster):

n/a

within the project:

the performance of the project in selecting the beneficiaries of the project. It highlights possible segregation by gender, race, social status, religious affiliation, etc. It may also denote the selection of beneficiaries according to other variables such as: capacity of acquiring debts, family income, tenure of civil address or registered ID, land or home ownership, legal occupation of land, tenure of titles of legal property, location in safe areas, etc. This indicator denotes the performance of the project in terms of covering and scope

a fair method of selection of beneficiaries	was	absolutely almost not at all	 x 	implemented in the project
women and men	had	absolutely almost not at all	x 	the same rights to obtain products and services in the project
residents from different races	had	absolutely almost not at all	x 	the same rights to obtain products and services in the project
residents from different social classes	had	absolutely almost not at all	x 	the same rights to obtain products and services in the project
residents with different religious affiliation	had	absolutely almost not at all	x 	the same rights to obtain products and services in the project
people without civil ID or not registered	had	absolutely almost not at all	x 	the same rights to obtain products and services in the project
residents of the lowest economic levels	were	absolutely almost not at all	x 	included as beneficiaries of products and services
people without legal tenure	were	absolutely almost not at all	x 	included as beneficiaries of products and services
non land owners or home owners	were	absolutely almost not at all	x 	included as beneficiaries of products and services
people located in unsafe areas	were	absolutely almost not at all	x 	included as beneficiaries of products and services

complete	ok	next		

impacts	project goals	62	all settlements in safe areas

before the project (before and/or after the disaster):
n/a

within the project:				
the contribution of the project to eliminate housing located in dangerous areas. It highlights the permanence of squatting settlements in risk-prone areas and remaining risks due to location. It denotes the capacity of the project to achieve the ultimate goal of eliminating physical vulnerability of housing				
housing in the region	was	absolutely	x	built in safe areas
		almost		
		not at all		
the project		absolutely		contributed to reduce settlements in risk-prone areas
		almost	x	
		not at all		
		absolutely		contributed to reduce the physical vulnerability of housing
		almost	x	
		not at all		
a similar disaster	is	absolutely		unlikely to happen to the same population in the same region
		almost	x	
		not at all		

complete	ok	start		